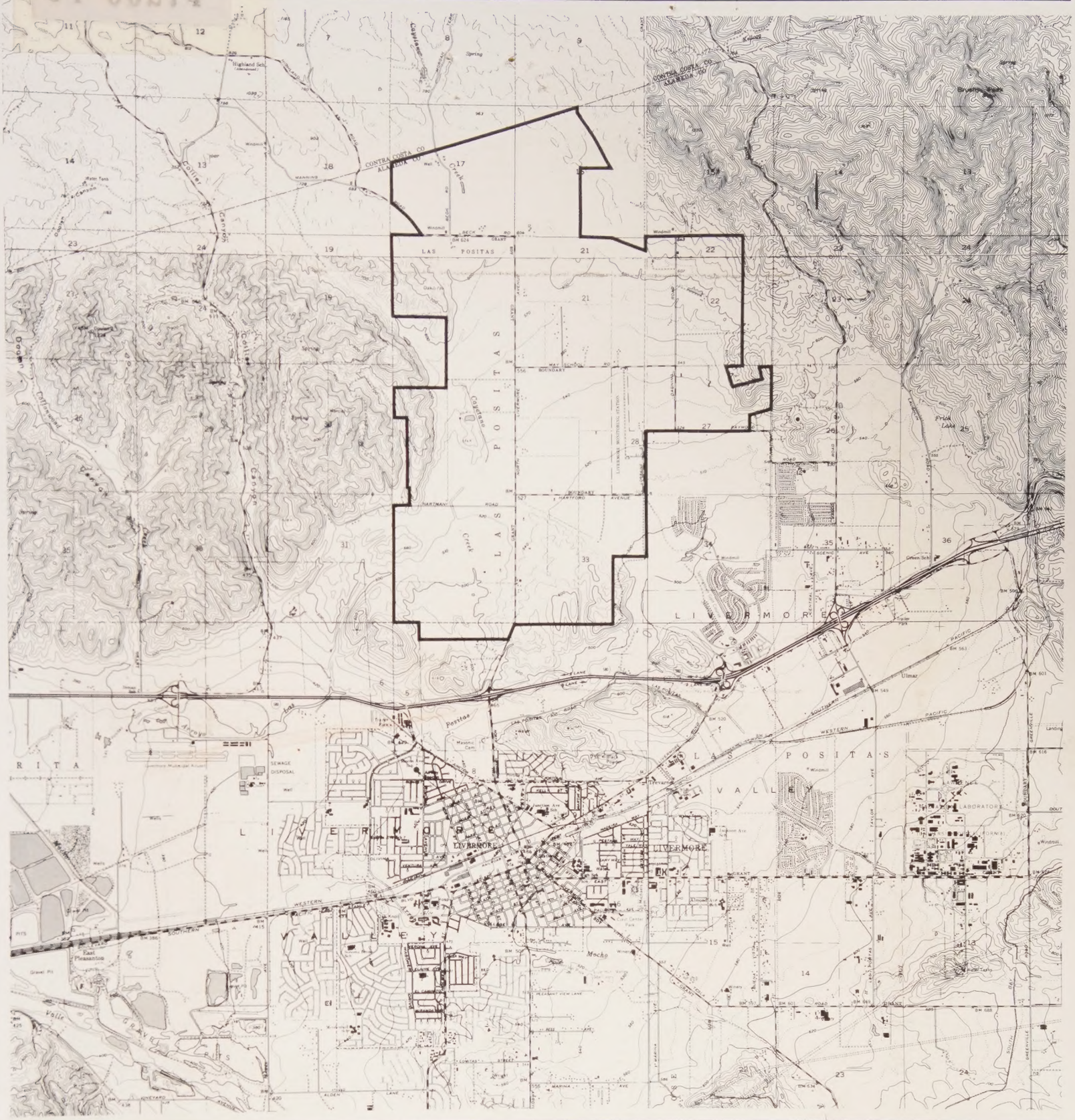
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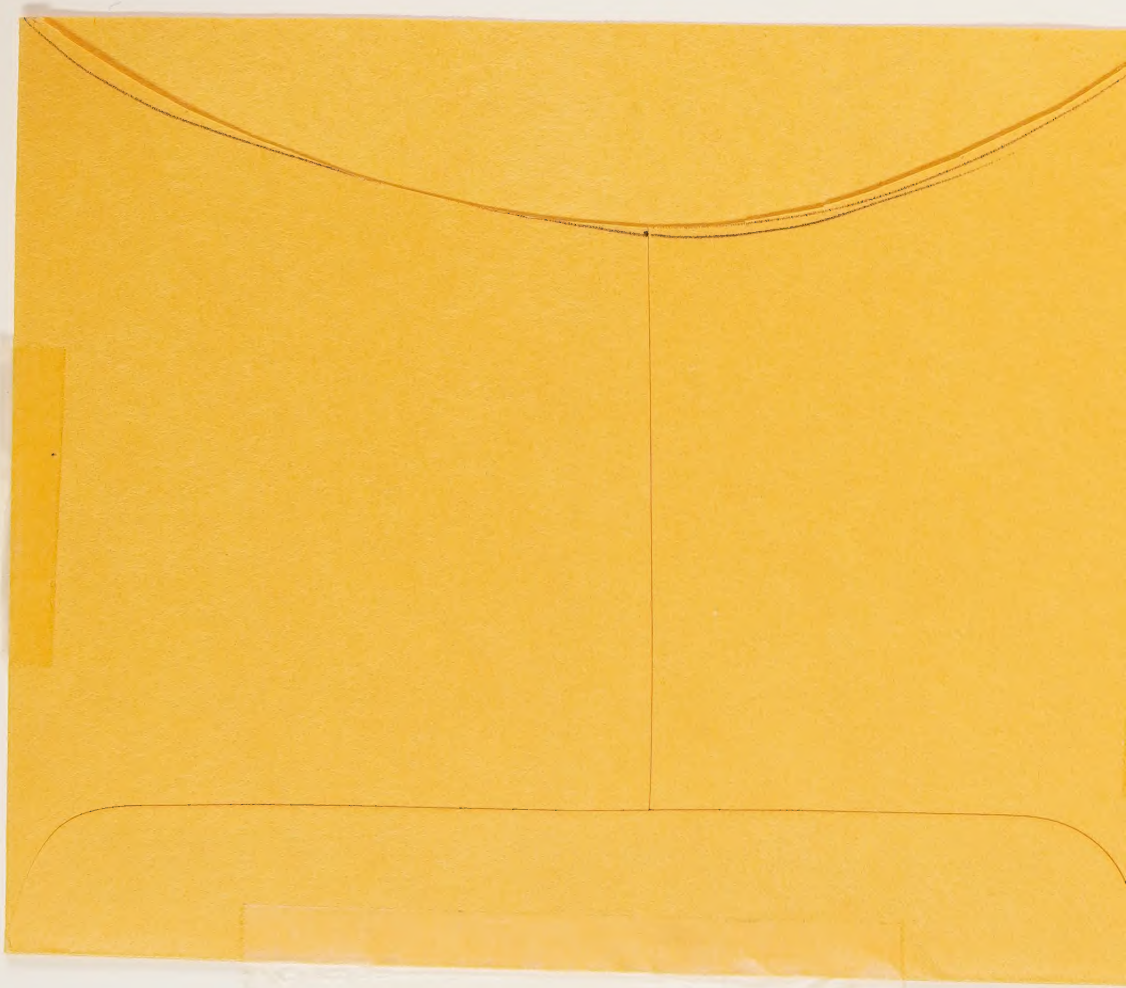


LAS POSITAS

GENERAL PLAN AMENDMENT and REZONING CONSIDERATIONS Draft Environmental Impact Report

(a revision of the June 1982 DEIR)

Alameda County Planning Department • March 1983



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ALAMEDA COUNTY PLANNING DEPARTMENT

399 Elmhurst Street, Hayward, California 94544 (415) 881-6401

March 30, 1983

Interested Parties:

With this letter we transmit, for your review and comment, a copy of the revised Draft Environmental Impact Report for the County of Alameda's consideration of a proposed General Plan amendment and rezoning to permit urban development of approximately 4,417 acres located north of the City of Livermore in an unincorporated area bounded on the south by I-580 freeway, on the east by North Vasco Road, on the north by Contra Costa County, and on the west by Collier Canyon Road. The current DEIR incorporates revisions and additions to descriptive and analytical materials contained in the first DEIR which was referred for public review in June, 1982.

Many of these changes follow from comments received during the public review of the June 1982 document. These comments have been included, as Appendix B, in the current DEIR. The revised Report has been prepared to "stand alone" as an assessment of the proposed "Las Positas" General Plan amendment and rezoning proposals, and need not be used in conjunction with the June, 1982 document.

A 45-day period is allowed for public review of the revised DEIR. All comments on the DEIR must be received by the Planning Department at the letterhead address by May 16, 1983 to be considered and included in the Final Environmental Impact Report.

The County of Alameda Planning Commission public hearing on this matter has been continued to Monday, April 4, 1983, beginning at 6:00 p.m., in the Auditorium of the Alameda County Public Works Building, 399 Elmhurst Street, Hayward, California, at which time and place any interested party may give testimony regarding the project and Draft Environmental Impact Report.

The tentative schedule for the Planning Commission hearing calls for continuance to an evening meeting in mid-April in the Livermore area, and to regularly scheduled meetings in the Public Works Building in Hayward during May and June, 1983. The location, date, and time of the mid-April meeting in the Livermore area will be announced at the April 4th meeting.

The tentative schedule on this matter also provides for Planning Department staff meetings, during April, with: 1) representatives of concerned public agencies, and 2) with owners of property within the area noticed for rezoning consideration. The agencies and property owners will be advised, by letter, of proposed dates and locations for these informational meetings.

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If you have any question concerning the "Las Positas" project or the Draft Environmental Impact Report, please contact Bill Allin, Planner III, or Betty Croly, Assistant Planning Director, at the letterhead telephone number.

Very truly yours,

William H. Fraley
Planning Director

WHF/sd

Enclosure

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SUMMARY

The County of Alameda has under consideration a proposal, submitted by the Las Positas Land Company, for amendment to the County General Plan and for rezoning to permit urban residential, commercial and industrial development of approximately 4,417 acres located north of the City of Livermore in an unincorporated area generally bounded by I-580 on the south, Collier Canyon Road on the west, North Vasco Road on the east, and Contra Costa County on the north. The proposal calls for development to extend over approximately 20 years, from 1985 to 2005. At buildout the project would include approximately 18,000 housing units on 2,226 acres, plus commercial uses (103 acres), industrial and office employment areas (543 acres), public and institutional uses (420 acres), and recreational and open space areas (815 acres). Public services would be provided by a combination of existing and new service entities to be funded, in part, through a proposed County Service Areas. A discrete sewerage system is proposed with on-site treatment for irrigation of landscaping and open space areas.

Significant impacts identified in this Draft Environmental Impact Report include the following:

1. Air Quality

   a. Construction activity, to continue between 1985 and 2005, would generate emissions from contruction equipment and trucks, suspended particulates from activity on disturbed sites and paved and unpaved roads, and wind-blown fugitive dust from disturbed areas. The vehicle emissions from construction activities would be relatively minor when compared to project long-term impacts.

      Mitigation: Mitigation of suspended particulate levels could be achieved to some degree by complying with standard dust suppression techniques including watering or oiling unpaved areas during construction, revegetation of graded or vacant land if construction activities are postponed, and suspending grading operations in high winds.

   b. Long-term air quality impacts would begin in 1985 and would increase through and beyond the year 2005 anticipated completion date. Emissions would be generated from both stationary and mobile sources. The principal pollutant emitted from stationary sources would be oxides of nitrogen from fuel combustion. These would reach about 0.5 tons a day (cold day) at project buildout. Local concentrations of carbon monoxide are projected to reach 7.3 ppm (eight hour maximum) along North Livermore Avenue in the project area, with I-580 contributing up to an additional 0.5 ppm in the vicinity of the freeway. This would not exceed the eight hour standard (9ppm). Outside the project area projected carbon monoxide concentrations along I-580, from Airway Boulevard to El Charro Boulevard could reach 8.7 ppm (eight hour maximum) with the Las Positas project (without mitigation measures); the addition of a background concentration along this sector could result in the

standard being exceeded. In other locations analyzed, predicted CO concentrations would be well below the eight-hour standard.

Hydrocarbon emmissons, from vehicular travel generated by the project would reach approximately 0.34 metric tons per day at buildout; this would be approximately 5 percent of total emissions in the Livermore-Amador Valley and San Ramon Valley under trend projections of growth for the area.

Mitigation: Local measures for mitigation of air quality impacts could include: road, interchange and highway improvements to reduce traffic congestion; local and inter-urban transit services; provision of a site and right-of-way for a possible BART or express bus extension; programs to encourage ride-sharing, staggered or flexible working hours. Partial mitigation of impacts could be achieved through land use strategies incorporated into the project (e.g., provision of adequate commercial uses and public services and facilities convenient to residents; provision of both housing and employment opportunities). Implementation of more stringent emission controls would require changes in state and federal legislation.

2. Biologic Conditions

The overall character of the vegetative community in the project area would change significantly with development of the proposed project. This impact is unmitigable. There is the known presence of C. palmatus, and possible presence of other endangered plant species; the habitat areas of these would be eliminated through proposed urban development. Further field investigations would be needed to supplement current information on project area animal and plant life. Many of the native animal species now inhabiting the project site would be displaced as urban development progresses. Most existing aquatic habitats (e.g., stream channels) would be maintained, but some physical disturbance would be necessary in some locations. Potential impacts on the rare Alameda striped racer cannot be determined at this time. The project area is within the foraging range of the golden eagle and prairie falcon and urbanization within the project area would eliminate a portion of this; it is difficult to assess the adversity of this impact on these species due to limited information on their populations.

Mitigation: Further on-site investigations would be required in order to more precisely define and identify significant habitat areas and to provide a basis for a habitat management plan for the area. Protection of same significant habitat areas may be achieved through specific site development conditions and requirements, through adjustments in the development plan, through establishing setback distances and buffer zones, and through development and management provisions to minimize indirect impacts of development on protected habitat areas.

3. Geologic Conditions

Impacts associated with slope stability would not be significant if certain adjustments in the land use diagram were made; currently some

development is indicated in areas where slopes exceed 15 percent. The potential for horizontal or vertical displacements of the ground surface along active faults within the project area is not believed to be significant. It is considered probable that during the next 50 years the entire site will be shaken by at least one earthquake of Richter magnitude 6.0 or greater originating on one of the faults in the region, and by numerous earthquakes of lesser magnitude having epicentral locations within 20 miles of the project area. It is estimated that an earthquake with Richter magnitude 7.5 originating on the Calaveras Fault is the maximum probable earthquake that could affect the area. The recurrence interval for such an earthquake would be in the range of 50 to 150 years. The most significant engineering consideration of site soils is their expansive nature, presenting potential problems associated with construction and design of structures and improvements.

Mitigation: Further site-specific investigations would be needed to determine the potential for surface movements along any faults previously mapped and/or suspected across the project area. The results of such investigations would provide the basis for determining appropriate setback distances for different types of structures. Use and enforcement of present UBC provisions should provide protection against the risk of collapse of structures, but would not guarantee that some damage to these and to contents would not be experienced during a major earthquake; further reduction of risk could be achieved through additional bracing precautions. Soil liquefaction and related phenomena are not considered to be generally present in the project area; site specific soils investigations would serve to identify local areas which have such potential, and recommend appropriate mitigating design. Problems of expansive soils may be mitigated by lime treatment or by pier and grade beam or deeper than normal foundations. Again, site specific engineering investigations would be required by the County Building Code.

4. Hydrologic Conditions

a. Groundwater in the southern portion of the project area is generally less than 10 feet below the ground surface; in these areas potential impacts are possible on site grading, particularly excavations, utility trenching, basement construction, and landscaping.

   Mitigation: The (revised) project includes provision for on-site groundwater management; this would minimize these potential problems.

b. Approximately 5,100 acre feet of treated (partially demineralized and blended) wastewater annually would be applied as irrigation on approximtely 1,400 acres of landscaped areas within the project area. When extreme conditions (such as an exceptionally long, wetter-than-average winter followed by a cool spring and summer) occur, there might be more wastewater generated than the proposed disposal areas could accommodate.

Mitigation: The project incorporates two provisions to deal with this contingency. First, ponds would be provided on-site for the seasonal storage of treated wastewaters; and second, a "contingency" area located outside of but adjacent to the project area, and controlled by the project sponsor, could be used for irrigation as required.

c. Potential adverse impacts on the chemical quality of existing local groundwater would be mitigated through demineralization to achieve acceptable mineral concentrations for spray irrigation disposal and through the provision of adequately designed, fully lined brine ponds to prevent seepage loss.

d. Irrigation disposal could impact the depth of the local water table. Where the water table is very shallow, additional recharge from applied wastewater could raise the water table to levels which would create problems for surface development.

Mitigation: The proposal for groundwater management (collection and treatment) would minimize these potential problems.

e. Surface application of treated effluent (which itself would have acceptable quality) could cause an increase in the rate of lateral subsurface migration and/or seepage into surface drainageways of the ambient, poor quality groundwater. The associated impacts could include chemical degradation of high quality groundwater resources located downstream of the project area.

Mitigation: These potential impacts would be mitigated by provisions of the current project proposal calling for on-site collection and demineralization treatment of groundwaters for reuse or stream discharge.

5. Local Plans and Policies

The project proposal to provide a number of services through a County Service Area would not be fully consistent with adopted County General Plan policies encouraging all new urban development to be municipal, or with Local Agency Formation Commission priorities favoring annexation to an existing city, first, annexation to an existing services district, second, and formation of a new special service entity, third. Some mitigation of conflicts with County Plan policies may be achieved through provisions allowing and/or encouraging eventual incorporation.

6. Police Protection

The project would require the addition of approximately 66 Sheriff's Department patrolmen, in approximately 10 patrols; an estimated 13 new patrol vehicles would eventually be required to serve the proposed development. Service to the Livermore-Amador Valley is now provided out of the Sheriff's Eden Township Substation. The proposed development may require re-opening of facilities in the Valley (i.e.,

the Santa Rita Substation) until such time as a station is provided in the Las Positas area.

Impacts could also be felt by the Livermore Police Department, since a portion of the Las Positas population would be attracted to commercial and recreation uses in the city, resulting in added City police calls. City mutual aide responses to the project area would also increase.

An estimated 9 additional Californa Highway Patrol officers, and three patrol vehicles would be needed to serve the proposed development at buildout.

Mitigaton: Impacts on the City and CHP are not directly mitigated. Fiscal impacts on the County Sheriff's Department could be mitigated through the establishment of special tax levied at Las Positas.

7. Fire Protection

Three new fire stations would ultimately be required. Project sponsors propose the use of the sponsors advance and of development fees to cover capital costs. Because the existing Structural Fire Fund was not originally intended to finance an urban level of fire protection service, a fire protection special tax could be established to cover ongoing operations.

8. Education

A total of eight elementary, three intermediate, and two high schools would be needed, at project buildout, to serve the student populations currently projected. Project sponsors propose that the school facilities be funded through development fees.

8. Library

During the earlier phases of development, prior to construction of a library in the proposed Las Positas development, impacts could be felt by other public libraries in the Valley, and particularly those in the City of Livermore.

Mitigation: These potential impacts could be mitigated through the interim use of bookmobile services.

9. Water Supply

If state water project facilities are developed to provide full entitlements to Zone 7 it is expected that there would be sufficient long-term water supplies to serve the proposed Las Positas development in addition to other projected growth in the Livermore-Amador Valley. If these entitlements cannot be provided, it is expected that deficits in water supplies would occur with Las Positas.

Mitigaton: Some reduction in water demand from the proposed development would result from water conservation measures as well as

re-use, on-site, of treated/demineralized wastewaters. The County could also condition or delay actions on the project until such time as the status of SWP future entitlements is more clearly defined.

10. Wastewater Treatment and Disposal

Primary impacts relate to local and off-site groundwater conditions, and are discussed above. The sanitary sewage system, as proposed, would also have the potential of contaminating groundwater through pipe breakage or tank leakage. These impacts would be mitigated through maintenance programs and through selection of particularly strong, leak-proof tank linings.

11. Streets and Highways

The project, in combination with other proposed development in the vicinity and in the Livermore-Amador Valley, could result in system-wide congestion during peak periods. Capacity conditions would be expected on many of the major arterials, freeway sections, and freeway ramps; these conditions could cause peak-period traffic volumes to spread out over several hours. Some of the areas of particular concern appear to be the mainline section of I-580, west of Airway Boulevard, Springtown Boulevard north of I-580, and the off-ramps at Livermore Avenue.

Mitigation: The proposed development would include many features which would help reduce traffic impacts. These include local employment opportunities as well as local commercial, recreational and public/institutional facilities. A site for a transit terminal would be set aside near the proposed Town Center which could serve as a collection point for BART express buses and local transit (or possible station of a BART extension to the Livermore Valley). The project would also include pedestrian/bicycle/equestrian trails. A series of Transportation System Management measures, such as the provision of local transit service, programs to encourage van-pooling and ride-sharing and flexible working hours among businesses and industries, have been proposed; these would be managed by a TSM coordinator. A number of physical improvements to road facilities outside the project area would also be required. The measured effect of these is the partial correction of projected traffic impacts; the current analysis indicates that, in a number of locations, the long-term impacts (unstable to forced flow conditions during peak periods) of the project would not be fully mitigated by the measures identified.

A valley-wide traffic study, providing more detail than the current analysis would need to be undertaken to precisely define potential impacts of the Las Positas development and of other major traffic generators in the Livermore-Amador and San Ramon Valleys. This study would provide a basis for assigning responsibility for the costs of required improvements to regional facilities. If the proposed Las Positas plan amendment and rezoning are approved, provision should also be made for periodic review of regional and project traffic levels to

more accurately assess changes in these and to serve, as required, as the basis for facilities improvements and/or adjustments in the project itself.

12. Fiscal and Administrative

a. Capital Costs and Financing

It has been proposed that: a County Service Area be created to provide some infrastructure and municipal services and to collect fees to finance infrastructure provided by other public agencies; all subdividers be charged a fee for the purchase of lands needed for public uses; all builders be charge a fee for the construction of public infrastructure; and the project sponsor advance the County an amount (approximately $14,000,000) to finance infrastructure and land acquisition required prior to the receipt of fees, which amount would be repaid from available surpluses in the Capital Improvement and Public Land Acquisition funds. Potential impacts of this proposed financing program are: 1) the initial burden of the capital costs would fall on landowners and developers and could possibly lower land prices and limit profits; 2) these costs would be passed forward to future residents and businesses, with most of the cost increase financed at mortgage interest rates rather than typically lower municipal bond interest rates; 3) there is the possibility that deficits in the fund balance may occur, delaying the capital building program and requiring subsidies from the County or other existing public service agencies; and 4) the use of a land purchase fee which would be directly proportional to purchase price may be legally questioned under Proposition 13.

Mitigaton: Potential fund balance impacts could be reduced or eliminated by increasing the Sponsor's advance and/or eliminating the pay back. If the sponsor and other benefitting landowners agreed to finance all fund balance deficits which could occur during buildout, the potential impact would be mitigated; the per unit cost of the public land fee and the development fee would be reduced by eliminating the pay back provision.

Two alternative capital financing approaches have been identified which do not share the risks or potential impacts of the proposed financing program. These are: a conventional special assessment district approach, and a Communtiy Facilities District.

b. Ongoing Costs and Revenues: County Service Area

It is proposed that the County Service Area be established to finance the ongoing operation of most local infrastructure and to administer capital funds distributed to other agencies. The CSA would be governed by the County Board of Supervisors, which would assume new responsibilities for management of the urbanizing area. Insofar as these new responsibilities impinge upon the Board's agenda, other County issues may not receive timely attention, resulting in an impact upon other County residents.

Revenues for ongoing costs would be entirely derived from user charges. Any initial deficits would be offset by a portion of the Sponsor's advance. Over time, surpluses would be eliminated by reducing user charges or by allocation of these to the Capital Improvement Fund.

Mitigation: The impact on the Board of Supervisors, at least for the first few years, appears unavoidable. However, once a population base were established, a Community Service District, with a locally elected Board of Directors, could be established to administer all CSD services. A CSD could be established from the beginning, operated by the Board of Supervisors or a locally elected board.

c. Ongoing Costs and Revenues: Alameda County General Government

The County of Alameda would provide key public services to the proposed development, including those provided on a County-wide basis, such as general administration, public health, and social services, as well as urban services, such as police and fire protection, road maintenance and library services, normally provided by municipal governments. These would be administered through the General Fund, Road Fund, Library Fund and Structural Fire Fund.

On the basis of fiscal assumptions included in the current analysis, the proposed Las Positas development would result in a negative fund balance for General Fund services in 16 of 20 years; these result not only from assumptions about cost, but also due to the high proportion of residential use compared to the commercial and industrial uses. The Road Fund would show a surplus only during the first phase of development; subsequent phases would not produce revenues adequate to cover road maintenance costs. This problem is not unique to Las Positas. The Library Fund would show a positive fund balance for each but the first year of project buildout. The Structural Fire Fund would show negative fund balances for 12 years of the buildout period, with cumulative deficits for each phase; this could be eased through additional revenues from the County's Augmentation Fund. Following buildout, positive fund balances should stabilize; property tax revenues, which would increase steadily throughout buildout, would cease growing in constant dollar terms; other revenue sources would generally keep pace with inflation; it is likely that Social Service and Health Service costs would increase. This could result in County costs in excess of revenues leading to possible reductions in service. The Road Fund would continue showing substantial deficits. The Library Fund should continue generating surplus revenue.

Mitigation: The projected General Fund deficits could be eliminated by financing all or part of the Sheriff's services with a special tax levied at Las Positas, through a Community Facilities District, for example. Another approach would be to

include more industrial and commercial land, if the market would support such uses, or to demonstrate that related off-site land uses would produce off-setting revenues to the General Fund. A Community Facilities District could also be used to impose a special tax for fire protection. The newly-created fire protection agency would have no connection with and would not exhibit the deficits shown in the Structural Fire Fund. Road Fund deficits in the proposed Las Positas project would be only a part of an overall pattern County-wide. The County Road Fund as a whole would require additional revenues; General Fund transfers could be required to avert substantial reduction in County road maintenance. The impact within Las Positas could be mitigated by imposition of Road Maintenance Benefit Assessments.

d. Ongoing Costs and Revenues: Public Service Agencies Other Than Alameda County

The proposed development would also be directly served by the Livermore Valley School District, the Livermore Area Recreation and Park District, and the Alameda County Flood Control and Water Conservation District, Zone 7. The development could also affect services provided by the adjacent City of Livermore and by the East Bay Regional Park District. The key impact of Las Positas upon the School District relates to the demand for new school facilities, rather than operations. Ongoing revenues for education would be generated from the allocation of a portion of the property tax supplemented with state aid. Park maintenance costs generated by the proposed development are projected to exceed revenues during the first phase of the project; subsequent phases are shown to produce positive cashflows. The adjoining recreation district, the East Bay Regional Park District, could receive additional use of its facilities; the District would receive no tax revenue from the proposed development and may be negatively affected; costs of this additional service would be borne by residents within the Regional Park District. The City of Livermore would be affected by development of Las Positas in several ways: Las Positas residents would depend in part on commercial services in the city, which would add to the city's sales tax revenues; public services provided by Livermore, and particularly transit service and libraries, may also be affected.

Mitigation: Initial fund balance deficits for the Livermore Area Recreation and Parks District could be offset by a fund transfer from the proposed Las Positas CSA operating contingency fund. Another approach would be to reduce or eliminate charges made by the CSA to LARPD for irrigation water (treated wastewater). The small fund balance deficit shown for Zone 7 for the first year of Phase I would also be offset by such a transfer from the contingency fund. There is no standard fiscal mechanism for mitigating the impact of the proposed development on the City of Livermore's library through financial support from Las Positas to the city. It would be possible, however, to eliminate some or all

of the projected problem by building a new library in the Las Positas area during Phase I.

15. Visual and Aesthetic Conditions

The existing visual conditions would be permanently altered, replacing agricultural open space uses and farm buildings with urban development. These impacts are unavoidable.

16. Acoustical Conditions.

Traffic volumes would accumulate with each phase of development and would result in increasing noise levels along major on-site and off-site thoroughfares. The accumulative increase in traffic volumes, including the proposed Las Positas development, would push the 60 CNEL noise contours farther from each roadway. The increased traffic volumes and related noise levels would pose an unavoidable noise impact to those residential land uses (existing and planned) on Livermore Avenue south of I-580 to Portola Avenue; State Route 84 between I-580 and Second Street; Springtown Boulevard; and New Collier Canyon Road through the proposed Northbluff development.

17. Energy

The proposed development would result in a large scale conversion of open space to energy intensive urban uses. Energy inputs include those for site preparation, construction, operations, and transportation.

Mitigation: Several energy conservation measures, in addition to those basic to the project proposal, could be incorporated. These include: passive and active solar systems, use of wind energy and energy conservation measures in residential, commercial, and industrial uses.

18. Land Use

The project would result in irreversible changes in land uses, from existing agricultural and rural residential uses to urban uses. These effects are unavoidable. During project buildout, conflicts could arise between planned urban uses and remaining agricultural uses within the project area. This would be partially mitigated through controls on project phasing, and through improvements in police protection services in the general area. Some "leap-frog" development is possible, due to the number of ownerships within the project area. The potential for this would probably best be mitigated through formal agreements among all ownerships to ensure orderly rates of development. Impacts of urban activities/uses on adjoining agricultural uses could occur. Again, these could be mitigated through improved police protection services, but also through design measure to buffer these open space areas from the community. The action of the County to approve the current project, to be served by a CSA governed by the County Board of Supervisors could establish a precedent for other unincorporated lands in the County. This effect is only partially mitigable.

A number of elements and features of the proposed land diagram are problematic, and could make implementaton of the proposed development difficult. These would best be resolved through adjustments in the diagram.

1.0 INTRODUCTION

Background

In December, 1981, the County of Alameda Planning Commission agreed to consider the application of the Las Positas Land Company proposing amendment to the County General Plan to permit urban residential, commercial, and industrial development on approximately 4,417 acres located north of the City of Livermore in an unincorporated area generally bounded on the south by I-580, on the west by Collier Canyon Road, on the north of Contra Costa County, and on the east by North Vasco Road. At buildout ($\pm$ 2005), the project would include approximately 18,000 housing units on 2,226 acres, plus commercial uses (103 acres), industrial and commercial office employment area (543 acres), public and institutional uses (420 acres) and recreational and open space areas (815). Public services would be provided by a combination of existing and new service entities to be funded, in part, through a proposed County Service Area. A discrete sewerage system is proposed, with on-site treatment for irrigation of landscaping and open space areas.

The Notice of Preparation of a Draft EIR for the proposed amendment was referred on February 9, 1982; the first Draft EIR for the application was issued on June 18, 1982. Subsequent to this, the County Planning Department received an application from the Las Positas Land Company requesting concurrent consideration of rezoning of lands within the Plan amendment area which they own or control through purchase options. Because these lands comprise only approximately half of the entire area of Plan amendment consideration, the Planning Commission, on June 21, 1982, agreed to establish an expanded area of rezoning consideration (in the 1521st Zoning Unit) to coincide with the area of Plan Amendment Consideration. All affected property owners were subsequently notified of this action.

The Planning Commission public hearing on the matter began in June, 1982 and has been continued to allow public review and discussion of the project and project DEIR in compliance with state Planning Law and with CEQA and state and County EIR Guidelines. At the hearing of December 20, 1982, the Planning Department staff advised that a revised Draft EIR was needed and would be prepared for the Plan amendment and rezoning considerations to incorporate significant new information on the project and project impacts which information had been developed subsequent to issuance and public review of the June 18, 1982 EIR document and which, therefore, had not been available for adequate public review and comment. The current document constitutes the revised Draft Environmental Impact Report for the Las Positas Plan Amendment and Rezoning Considerations.

Statutory Requirements

The Environmental Impact Report is being prepared in accordance with requirements of the California Environmental Quality Act of 1970 (CEQA), as amended, and with state and County implementing guidelines.

Use of the EIR

The EIR will be considered by the County Planning Commission and Board of Supervisors prior to their actions on the proposed Plan amendment and rezoning. If these are approved the EIR may be used by the Commission and Board in subsequent actions to implement the project, provided that these subsequent actions are consistent with the amended Plan and zoning.
Approximately 1,675 acres within the project area are in Agricultural Preserve. Applications for Williamson Act contract cancellations have been filed for a portion of these under Government Code Sections 51282.1 and 51282(A)(2). It is intended that the current EIR may be used by the Board of Supervisors in its consideration of these and of future applications for contract cancellation within the noticed project area.

It is also intended that the EIR be used by the Local Agency Formation Commission in its considerations of the proposed County Service Area for the project, and by the County Public Works Agency, Health Care Services Agency, and Flood Control and Water Conservation District, Zone 7, and by the Regional Water Quality Control Board in their assessments of the proposed discrete sewerage system and CSA.

Some or all of these future considerations may require the preparation of additional or more detailed environmental analysis to supplement materials contained in the current EIR.

Preparation of the Environmental Impact Report

The County of Alameda Planning Department is responsible for the preparation and content of this Environmental Report. Project manager is Bill Allin, Planner III; Betty Croly, Assistant Planning Director, is responsible for overall direction and editing of the EIR and related Plan amendment analyses; other Department staff assisting in the review of materials and preparation of the DEIR include Paul Deutsch, Michael Munk, Leslie Robin, and Lisa Watkins.

The DEIR incorporates descriptive, technical and analytical materials developed by various consulting firms. The firm of Wilsey & Ham is responsible for the major body of materials submitted, and for coordination of work prepared by the engineering consultants: Lee E. Ham is project director and John C. Spencer, AICP, is project manager for the Wilsey & Ham Las Positas project team; research and text are by Leslie Howell, Dennis Wilde, Errol Nelson, Jim Killner, Robert Zoller and Doug Wiebe. Contributing engineering consultants include: Cooper & Clark, geotechnical and hydrological sections; and Lowry and Associatess, conceptual wastewater management plan.

The fiscal and financial impacts section was prepared by Angus McDonald and Associates with assistance from Wilsey & Ham and Gruen Gruen & Associates.

Preparation of this DEIR has also involved the considerable assistance of a number of County, city and service agencies; many of these were referred and provided helpful comment on portions of draft descriptive, technical and analytical materials. A listing of agencies and organizations consulted in the preparation of the DEIR is included.

Relationship of the Revised Draft EIR (March , 1983) to the June 18, 1982 Draft EIR

As indicated, the current document is the second of two Draft Environmental Impacts Reports prepared for the County of Alameda's consideration of Plan amendment and rezoning proposals for the subject 4,417 acre area. It is intended that the current document "stand alone" as an assessment of the proposed project; all factual and analytical materials deemed to be necessary to the public review of the project, and to County actions on the proposed Plan amendment and rezoning, are included in this document, or are included by reference as indicated herein. These materials supersede those contained in the June 18, 1982 Draft EIR for the project. However, both Draft EIR documents, all materials included by reference, as well as all public comment on both DEIRs and the staff responses to these comments are or will be included as parts of the official public record on the matter, and will be considered by the County Planning Commission and County Board of Supervisors in their actions.

The current document incorporates substantial revisions to the June 18, 1982 DEIR. The current document is not annotated, to indicate deletions and additions to the earlier DEIR; it was determined that such annotation would be unnecessarily distracting to the reader and would divert attention away from the basic issues to "differences/similarities" between the two reports. An annotated DEIR has been prepared and is on file; it is a part of the public record and is available for public review at the County of Alameda Planning Department offices in Hayward, California.

A great number of comments were received during the 45-day public review of the June 18, 1982 Draft EIR. Planning Department responses to these were developed and were presented at the Planning Commission hearing of October 4, 1982. These comments, and an updated set of staff responses to them, are included as an Appendix, under separate cover, to the Draft EIR. The comments and responses should also provide the interested reader with a better understanding of some of the major issues surrounding the project and project EIR and, in several cases, with an understanding of the basis of changes in the project and/or EIR.

Summary of Changes in the Draft EIR

The following summarizes the major, or substantive changes to the June 18, 1982 DEIR which have been incorporated in the current document.

Section 2.0 - Project Description

The basic concept proposed by the Las Positas Land Company has not been changed. Certain elements of the proposal relating to public services and facilities have been revised.

Section 4.1 - Atmospheric Conditions

Several corrections to the description of existing conditions are included, based on comments by the AQMD. Additional discussion/analysis is also included regarding: impacts of construction activities on suspended particulates; background carbon monoxide levels, and hydrocarbon emissions.

Section 4.2 - Biologic Conditions

Additional discussion is included regarding the presence of rare and endangered plant species in the area (Cordylanthus palmatus); the use of the area by the golden eagle and prairie falcon; and off-site runoff, erosion and sedimentation impacts.

Section 4.3 - Geologic Conditions

The section has been generally reorganized, to separate descriptive materials from impact assessment. Some additional discussion is included regarding proposed land uses in areas of moderately unstable slopes, and mitigation of potential impacts within areas of potential surface rupture (fault traces).

Section 4.4 Hydrologic Conditions

The project proposal has been amended to include provisions for on-site management of groundwaters to minimize constraints in portions of the project area where there are high groundwater levels, and in order to preclude migration of poorer quality groundwaters in the project area to the Livermore-Amador Valley Central Groundwater Basin. Discussion of project impacts on groundwaters in Section 4.4 has been expanded accordingly.

Section 5.1 - Employment and Economic Conditions

The revised section includes recently available estimates and projections of employment for the Region, the East Bay and the Livermore-Amador and San Ramon Valleys. Information on announced/identified commercial and industrial "projects" in the Valleys has been updated. Whereas the June 18, 1982 DEIR included a single projection of Valley employment, based on these "projects," the current DEIR includes several alternative projections. These include trend projections reflecting recent ABAG projections for the Region and East Bay.

Section 5.2 - Population and Housing

Assessment of potential projected relationships between housing supply and employment within the Valleys is modified to reflect conditions under the alternative, "trend" employment projections, as well as under employment projections based on completion of commercial/industrial projects.

Section 5.5 - Public Services

The section includes substantial revisions throughout. Discussion of Police services is revised to reflect current organization and staffing. Discussion of Fire Protection services is expanded and revised. Discussion of schools is modified to reflect comments received from the School District. Discussion of impacts on the East Bay Regional Park District is included. Discussion of library facilities requirements is expanded based on comments from the County Library System. Discussion of health care facilities is substantially revised and expanded.

Section 5.6 - Public Utilities

Discussion of water supply conditions is substantially revised and includes recent estimates and projections of supplies and demand by Zone 7 and the State Department of Water Resources. Additional discussion regarding project impacts on major water distribution facilities is included.

Discussion of project proposals for wastewater treatment and disposal is expanded. The section includes a description of the new proposal for groundwater management within the Las Positas project area.

Section 5.7 - Transportation

Discussion of project traffic has been expanded to indicate the effects of proposed facilities improvements and proposed Transportation System Management on levels of service. Assumptions regarding internal/external travel splits and regarding the effectiveness of TSM strategies have not been modified.

Section 5.8 - Fiscal and Administrative

The section has been completely revised. Where they have been made available, new capital improvements costs and operating costs have been incorporated. The section includes new discussion of the vulnerability of the proposed financing measures to unforeseen conditions. Alternative measures for project financing are identified and evaluated as mitigation to potential impacts of the proposed mechanisms.

Section 5.12 - Land Use

Additional descriptive information on existing uses is included; the discussion is expanded to generally describe both direct impacts and potential indirect impacts.

Section 7.0 - Alternatives to the Project

Portions of the discussion are modified to reflect alternative assumptions regarding projected employment growth in the Livermore-Amador and San Ramon Valleys. Three new alternatives are identified and briefly evaluated. These include: an alternative with reduced amounts of employment and increased housing; and an alternative land use diagram with approximately the same amounts of employment and housing as the proposed project, but expanded in area to include "developable" adjoining areas.

Section 8.0 - Growth Inducing Impacts

The discussion is expanded to generally describe potential impacts of the proposed development and of changes in County policy.

2.0 PROJECT DESCRIPTION

2.1 SUMMARY OF PROPOSED DEVELOPMENT PROPOSAL

The Las Positas project, at full development, would cover approximately 4,400 acres in an area north of I-580 freeway and north of the City of Livermore. At build-out the project is planned to be a multi-use community with a resident population of approximately 45,000. In addition to areas for residential, business office, and industrial uses, the project proposal would also include accessory commercial centers, schools, parks and other required infrastructure.

Table 2.1 summarizes the proposed allocation of land uses at full development.

TABLE 2.1
ALLOCATION OF LAND USES
LAS POSITAS PLAN AMENDMENT PROPOSAL

Land Use	Acreage	Subtotals	% of Total
Residential		2,226 acres	50%
Detached-Large Lot (2 DU/AC)	406		
Detached-Average Lot (4.5 DU/AC)	395		
Detached-Zero Lot (7 DU/AC)	887		
Townhouses (15 DU/AC)	312		
Condominiums/ Apartments (20 DU/AC)	226		
Commercial		103 acres	2%
Town Center	40		
Village Center	48		
Neighborhood Center	15		
Employment		543 acres	12%
Office	60		
Research & Development	483		
Public & Institutional		420 acres	10%
Elementary School	80	(8 schools)	
Intermediate	60	(3 schools)	
Senior High	70	(2 schools)	
Government	10		
Institutional & Church	30		
Wastewater Treatment	170		

TABLE 2.1 cont.

Land Use	Acreage	Subtotals	% of Total
Recreational		865 acres	20%
Parks	230		
Open Space	635		
Transportation		260 acres	6%
Transit Station	10		
Major Roads	250		
TOTAL		4,417 acres	100%

SOURCE: Wilsey & Ham

Approximately half of the project site would be covered by residential developments. Five residential density categories are proposed, ranging from a low average density of two dwelling units per acre to a high average of twenty units per acre. Half of the proposed housing units would be in attached unit structures. The average density of all residential uses would be 8.1 units per acre.

Three types of commercial centers are proposed: a single town center, three village centers, and several neighborhood convenience centers.

Approximately 480 acres are proposed for research and development, high technology and other similar industrial and business uses. This acreage is divided into two industrial parks. An additional 60 acres, located near the center of the community, are planned to accommodate office uses.

Eight elementary, three intermediate, and two high schools are planned to serve school-age children in the community. The plan diagram indicates sites of intermediate and high schools; the specific sites for elementary schools, as well as sites for fire and police stations and other smaller governmental and institutional uses would be determined at later planning stages.

Approximately 865 acres, or about 20 percent of the total project area, is proposed for open space uses, including neighborhood and community parks and open space corridors. A network of footpaths is proposed to link residential areas to major activity and employment centers. The proposed wastewater treatment system would provide recycled, treated water for irrigation of playfields, parks, open space areas, and other project landscaping.

Table 2.2 presents a summary of project phasing which is proposed to occur in four, five-year increments beginning in 1985. Approximately 4,500 dwelling units would be developed during each five-year period, accommodating approximately 11,300 people per phase. The phasing of business and industrial parks and office areas is proposed to generally increase from an initial 75 acres developed during Phase I to an increment of over 200 acres to be developed in Phase IV.

TABLE 2.2
SUMMARY OF PROPOSED
LAS POSITAS PHASING PROGRAM

Phase	DU's	Average Density (DU/Acre)	Population	Employed Persons In Las Positas*	Jobs in Las Positas
I (1985-1990)	4,470	7.1	11,699	6,035	3,207
II (1990-1995)	4,509	8.5	11,443	6,087	4,187
III (1995-2000)	4,502	8.6	11,243	6,078	5,833
IV (2000-2005)	4,519	8.4	11,003	6,101	8,968
TOTAL	18,000	8.1	45,388	24,301	22,195

*Demand = 1.35 x DU

2.2 MAJOR DESIGN CONCEPTS

The physical design of the proposed development is illustrated in Figure 2.1. Project sponsors indicate that this design is based on three primary design considerations: site topography, access, and the concept of a density gradient.

o Topography

Boundaries of the proposed development are largely determined by the topography of the setting, characterized by a relatively flat valley surrounded by rolling hills. The proposal would limit most urban uses to the valley, leaving most of the surrounding hills in open space uses.

o Access

The design of the road system serving the proposed development reflects the location of existing interchanges with I-580 freeway. The North Livermore Avenue interchange will become the primary means of access to the project and North Livermore Avenue would be designed and improved as the project's primary arterial. This road would link all main activity generators in Las Positas. Three other existing interchanges with I-580 freeway providing access to the project are at Airway Boulevard, to the west of the project area; Springtown Boulevard to the south; and Vasco Road to the east. The proposed project's main road system, consisting of an inner and outer loop is designed to permit secondary access to I-580 through any or all of these interchanges.

o Density Gradient

The proposal provides a gradient of residential densities and levels of activity ranging from high density and more intensive land uses located near the center of the community to low density uses located toward the community's edges. Project sponsors indicate that this is intended to allow for a reduction in vehicle trip lengths, to encourage walking and bicycling, to allow for more efficient use of transit services, and to create a focus of uses and activities for the community.

2.3 DESIGN ELEMENTS

The current proposal was submitted as a conceptual development plan. Elements of this plan are shown in Figure 2.1, and described in this section. It is proposed that specific improvement plans and subdivision development plans be developed and adopted during the ongoing development program to define specific alignments, boundaries and uses in greater detail. The specific location of elementary schools, neighborhood parks, trailway open space areas, and of neighborhood commercial areas would also be determined on a project specific basis. All improvement, subdivision and development plans would need to be consistent with the provisions of the conceptual development plan, including the diagram and related development guidelines which are proposed for adoption as a part of the County General Plan and for project area rezoning, both of which are the subject of this document.

Roadway System

The proposed main road system consists of an inner loop, an outer loop, and a series of radial streets between these. The main roadway system and typical cross sections are shown in Figures 2.2 and 2.3.

The series of radials, crossing and connecting the two loops, are proposed to serve the residential areas, village centers and industrial/business districts. The proposed inner loop would be an extension of North Livermore Avenue and would provide access to I-580 freeway at the existing interchange. Existing interchanges which would provide secondary access to to the project include: the Airway Boulevard - Collier Canyon Road interchange which would be reached from the project via a new roadway extending past Chabot Community College and through the proposed Northbluff development; the Springtown Boulevard interchange which would be reached via an extension of Springtown Boulevard; and North Vasco Road interchange, which would be reached via Hartford Avenue and North Vasco Road.

Residential Areas

The overall average density of Las Positas residential areas is 8.1 housing units per gross residential acre (including local streets but excluding parks, schools and other public uses and major arterials). Shown in Table 2.3 are the five residential categories indicating the distribution and average densities of proposed residential uses. These categories represent average densities; variations in internal densities as well as a variety of housing types would occur within each residential district and category consistent with applicable plan objectives and policies.

TABLE 2.3
PROPOSED ALLOCATION OF RESIDENTIAL USES BY AVERAGE DENSITY

Average Density	Gross Acres	DU's	% of Total	Household Size	Population
2.0 DU/AC	406	812	5%	2.75	2,233
4.5 DU/AC	395	1,779	10%	2.75	4,892
7.0 DU/AC	887	6,209	34%	2.60	16,143
15.0 DU/AC	312	4,680	26%	2.65	12,402
20.0 DU/AC	226	4,520	25%	2.15	9,718
8.1 DU/AC	2,226	18,000	100%	2.52	45,388

SOURCE: Wilsey & Ham

- 2 DU (Dwelling Units)/Acre: These areas would contain larger, single family detached residences on larger lots. Most of these residential uses would be located on the perimeter of the community, adjoining the hills. Five percent of all housing units in the project would be in this density category.

- 4.5 DU/Acre: These areas would include single family-detached units on lots averaging 7,000 square feet. Much of this proposed housing would also be located at the perimeter of the project. Ten percent of the total project units would be in this category.

- 7.0 DU/Acre: The predominant type of housing in these areas would be detached units, but on smaller lots than in other single family residential areas. These areas would generally be located between lower density and higher density residential areas. A variety of housing types would be included - "zero-lot-line", patio homes, cluster housing, townhouses, manufactured housing, and some residences on larger lots. Approximately 34% of total project units would be in this density category. It is proposed that manufactured housing would represent approximately seven percent of the total project housing stock.

- 15.0/DU Acre: Two or three-story townhouses would be the typical residential type in this category. The 15.0 DU/acre areas would be located near the center of the community and near planned village centers. A variety of housing types would be included - townhouses, multi-family structures, and cluster developments.

- 20.0 DU/Acre: Approximately one-quarter of total dwelling units proposed would be in this density category. Housing types would include townhouses and medium to high rise multi-family structures. This housing would be located in central areas of the community proximate to planned commercial and employment areas. It is expected that much of this density development would not occur until the later phases of the project.

Commercial Areas

The four planned centers would be located at intersections of the major road system. These centers would include basic neighborhood serving stores and businesses, such as supermarkets, hairdressers and pharmacies, as well as specialty shops, restaurants and professional offices. The village centers would be connected to the proposed pathway system.

Smaller, more convenience-oriented neighborhood shopping centers are planned to be located wherever the distance to village centers would be too great for meeting convenience shopping needs. The plan diagram indicates several possible locations for these neighborhood centers; other sites may be added if determined to be needed.

The town center is proposed to serve as the focal point of the community. It would include establishments providing the most specialized goods and services and would also contain the community's administrative office and a range of professional services.

Employment Areas

Two industrial/business parks are planned. The smaller of the two, encompassing approximately 176 acres and located off North Livermore Avenue approximately one mile north of I-580, would be the first to develop.

It is proposed that once the community has become established, a larger business and industrial park be developed. This park would be located on Hartford Avenue near the center of the community. Pedestrian and bicycle access from surrounding residential areas would be provided by the proposed pathway system. This may allow parking requirements to be reduced, permitting more intensive development of area sites.

The plan includes a proposal for a 60 acre office district to be located next to the town center. This district adjoins a proposed transit station site and could be served by the station should rail rapid transit service be eventually extended to the Livermore area and a link extended to serve the proposed Las Positas development.

2.4 PUBLIC SERVICES AND FACILITIES

Schools

A total of eight elementary, three intermediate, and two high schools are proposed for Las Positas. The number of needed schools has been derived using current Livermore Valley Unified School District standards and formulas for projecting future student populations (see Table 2.4). These criteria would therefore need to be periodically reviewed and proposals for facilities amended as demographic factors change.

TABLE 2.4
PRELIMINARY SCHOOL FACILITIES PROPOSALS

Grade	Students	Schools	Acres/ School	Total Acreage
K-5	4,630	8	10	80
6-8	3,470	3	20	60
9-12	3,600	2	35	70
				210

Elementary schools are not sited on the current plan diagram; project sponsors suggest that these be located at intersections on the proposed footpath system and away from busy streets. Planned intermediate and high schools are located close to the main road system.

Parks and Open Space

The acreage of proposed neighborhood and community parks, summarized in Table 2.5, is based on current Livermore Park and Recreation District standards which in part reflect demographic characteristics; possible revisions in park proposals may therefore be made to reflect demographic changes through project build-out.

TABLE 2.5
PARK FACILITIES PROGRAM
ANTICIPATED IN LAS POSITAS

Type of Park	Parks	Park Size	Total
Neighborhood (1 per 2,500)	18	10 acres	180 acres
Community (1 per 25,000)	2	25 acres	50 acres
Total			230 acres

Proposed neighborhood parks are not indicated in the plan diagram; preferred locations for these would be at intersections of the pathway system near elementary schools. The two community parks are proposed for locations at the southern edge of the project area. Open space corridors are proposed, as schematically illustrated in Figure 2.4. These would provide a place for on-site disposal of treated wastewater. The network of open space corridors and parks would be connected by a footpath system extending throughout the community.

Fire Protection

Fire protection service to the project would be provided initially by the Alameda County Fire Department, but may ultimately become an additional responsibility of the County Service Area. It is estimated that three new fire stations would be necessary to achieve an urban service level equivalent to that in Livermore. The proposal calls for construction of the first station in Phase I, the second in Phase III and the third in Phase IV (see Figure 2.5 for phasing). All three stations would have four firefighters on duty at all times (one captain and three firefighters). All three stations would be equipped with a squad truck and a 1,500 gpm pumper. Stations built in Phases III and IV would be equipped with a half-ton pickup truck. The headquarters station, built during Phase III, would be equipped with a 1,500 gpm ladder truck. It is expected that this level of service would be sufficient to merit an Insurance Service Office rating of 4. In order to provide adequate fire protection during the first months of construction, the trucks and equipment for the first station would be purchased at the initial stages of construction and operated out of either the proposed Northbluff development station to the west of the Las Positas project, or the existing ACFD station at College and "P" Streets in Livermore.

Police Protection

Police protection service to the development would be provided by the County Sheriff's office. Assuming a standard of service similar to that provided to Dublin, a staff of 66 patrol officers, 15 investigating officers, 6 service personnel, and one administrator would be needed to serve the Las Positas development.

Initially, patrol, investigations, service and administrative personnel would operate from the Eden Township station. It is proposed that a local police station be constructed in the Las Positas development during Phase III. Project sponsors propose that this station be financed by property tax revenues.

Based on a current countywide patrol size of 6.5 patrolmen per posted position, the estimated 66 additional patrolmen would represent approximately 10 patrols; 13 additional vehicles would be needed for these patrol units.

The level of service estimated for the Las Positas project is based upon demands generated by residential, commercial and industrial uses; the planned residential uses would, however, comprise the bulk of demand, and consequently, the addition of staff and patrol vehicles would be phased to correspond to the phasing of residential development (approximately 25 percent per phase).

Traffic patrol service would be provided by the California Highway Patrol (CHP). The CHP estimates a need for nine additional officers and three additional patrol vehicles to serve the proposed Las Positas development at buildout. This would allow for one or two officers at any given time and an average requirement of 5.5 officers per day. The proposed project would place an increased demand on "Late Night Response" vehicles; however, no additional staff would be required. All CHP patrols serving Las Positas would operate out of the existing Hayward station.

Library

The project area is within the Alameda County Library System. A 15,000 square foot facility is indicated as being adequate to serve the project area population. This facility would be constructed during Phase III.

Health Care

The project does not include a specific proposal for a major hospital or similar health care facility. Project residents would be served by facilities elsewhere.

2.5 PUBLIC UTILITIES

Sanitary Sewerage

The proposed wastewater management plan for Las Positas consists of on-site treatment and reuse in the form of greenbelt and landscape irrigation. This would involve the construction of a wastewater reclamation plant and the installation of a piping system to distribute tertiary, treated and demineralized wastewater for on-site irrigation. The entire wastewater disposal system would be provided by a County Service Area. Any treatment plant proposed for construction must satisfy the requirements of the Regional Water Quality Control Board (RWQCB) and the State Department of Health (DOH). RWQCB must issue discharge requirements for any treatment facility in the San Francisco Bay area and, subject the proposed project to a review by other interested agencies. RWQCB would incorporate into the discharge requirements the standards established by DOH for irrigation by sewage effluent and for disinfection levels.

The proposed treatment plant would accommodate 5.0 million gallons per day (mgd) average day flow after the project is completed. Because it is expected that the project is to be developed in roughly four equal five-year phases, the facility would be constructed to suit the demand by phase. The initial 0.50 mgd facility would be operational prior to Phase I. The subsequent buildout of the facility would also be done in the same manner. The wastewater treatment plant would be sited on 20 acres in the southwestern corner of the town. Figure 2.5 illustrates the location of the proposed plant and the backbone collection system.

Wastewater collected and treated at the plant would be pumped through the irrigation piping system. Treated wastewater would be delivered to either seasonal storage ponds or directly to public sites, open and common areas, and landscaped areas along major streets for direct irrigation. The seasonal storage ponds, located throughout the town within the open space system (see Figure 2.4), would be capable of holding 90 days of treatment plant flow.

Approximately 1,400 acres would be required for irrigation, receiving 45 inches of water per year. This area would be within or adjoining the Las Positas project area.

Figure 2.7 shows several typical cross sections for the proposed seasonal storage ponds. The bank and landscape treatment would vary depending upon pond location, size and physical context. All ponds would be lined so as to prevent

seepage into the groundwater system. The location and design of the ponds as well as the landscaping of the irrigated areas would be determined on a site-specific basis.

The wastewater disposal system would also require approximately 200 acres of evaporation ponds. The Phase I pond is proposed just south of the treatment plant and would be about 50 acres in size, and lined to prevent groundwater seepage. Three subsequent ponds would be provided within open space areas, one each phase.

Groundwater Management

A groundwater collection and treatment system is proposed to: 1) control groundwater levels where they are currently high; and 2) limit the flow of poorer quality groundwater to the basin to the south of the Las Positas project area. A collection system would drain an area of approximately 950 acres in the southern part of the project area. The collected groundwater would be treated and demineralized for reuse or stream release.

Water Supply

The proposed Las Positas water system would be provided by a County Service Area, and would consist of installation of supply transmission pipelines, distribution mains, booster pumps and storage facilities to provide 8.0 mg (average consumption) per day for an ultimate population of 45,500 residents plus 5.0 mg for fire flow at a rate of 8,000 gpm for 10 hours.

The supply transmission lines (2.56 miles of 24" pipe and 2.84 miles of 18" pipe) would be connected to the existing major transmission lines owned and operated by Zone 7 of Alameda County Flood Control and Water Conservation District, namely: the 36" Cross-Valley Pipeline (supplied by Del Valle Treatment Plant) and the 18" Vasco Pipeline (supplied by Patterson Treatment Plant). Because of the considerable distance of the town's distribution main from the source, a series of 2,500 gpm booster pumps are proposed for each development phase in order to provide adequate service pressures. (Figure 2.8.)

Except for main supply transmission lines and booster pump, the water distribution system would be installed simultaneously with each development phase.

On the assumption that the wholesale water supplied by Zone 7 is satisfactorily treated, a separate water treatment facility is not proposed at this time.

Each of Phases I, II, and IV would have a 3.6 mg storage tank with a 3.0 mg tank for Phase III. A total of 13.5 mg storage would be required for project completion. These tanks would be located off-site, at a suitable elevation, adjacent to each phasing subarea.

Storm Drainage

The proposed Las Positas storm drainage system would consist of a network of main collection pipes and crossdrains, complete with manholes, drop inlets and catch basins within the proposed development limits.

The main collection pipe, ranging from 24" to 30" in diameter would be mostly installed within the project streets rights-of-way.

The site of the proposed development is bounded by two natural drainage ways: Cayetano Creek and Las Positas Creek. The collector main would be connected to these within the area.

The piping system would be installed by phase, each component to be sized to accommodate flows from subsequently developed areas.

Solid Waste

Las Positas could be served by existing scavenger companies through a franchise agreement with the Las Positas County Service Area or with the County.

Based upon a solid waste generation factor of 4.5 pounds/capita/day, Las Positas would generate approximately 100 tons per day at full development. It is expected that solid waste from the project would be disposed at the Altamont Sanitary Landfill or the Vasco Road landfill.

Power and Communication

Telephone service for the proposed Las Positas development would be provided by Pacific Telephone Company. Although existing capacities are not adequate to serve Las Positas, the telephone company's expansion plans for service through 1984 assumes the eventual development of the Las Positas area. Pacific Telephone estimates a 15-18 month period from notifications of service need to provision of service. The company is prepared to meet whatever service demands are placed upon it.

Electrical power and natural gas for Las Positas would be provided by Pacific Gas & Electric from existing transmission lines.

2.7 PROPOSED FINANCING PROGRAM

The Las Positas project is unlike a typical development project. There are approximately 51 owners in the project area. The typical development is controlled by one owner or developer who either proposes to subdivide and sell improved land or to develop the entire project. The sponsor of the current application controls approximately 50 percent of the Las Positas project area.

Several new financing and development control mechanisms are proposed. These new mechanisms would require authorization by the County Board of Supervisors, and would require that ordinances, or resolutions be developed specifying the details of procedures, authority and responsibility. Also required

would be a community development management system to allow the County to monitor development activity and public facilities needs and forecasts, and to evaluate and set fees.

County Service Area (CSA)

A CSA is proposed to provide the following services:

- o Sanitary sewers
- o Treated water
- o Potable water
- o Street lighting
- o Solid waste (a mechanism to award a franchise to a private scavenger company)

In addition, the CSA should have the long-term capability to provide the following additional services:

- o Fire protection (originally by the Alameda County Fire Department)
- o Police protection (originally by the County Sheriff and Highway Patrol)
- o Parks and recreation (originally by the Livermore Area Recreation and Park District)
- o Communications (cable television, etc.)

Administrative responsibilities of the CSA would require a staff specifically assigned to the project.

Development Control Procedure

A procedure is proposed to coordinate the approval of development proposals with an officially adopted phasing plan for capital improvements and services to be provided by the CSA, the County, and by other agencies. (The sponsors preliminary proposed phasing plan is the subject of the fiscal impact analysis in Section 5.8 of this EIR.) Developments would normally be approved if adequate public services are provided to the site proposed for development or subdivision, or services are planned for in the adopted phasing plan, and if adequate capital and operating funds can be provided. If these conditions were not met, it is proposed that applicants may either pay for the necessary extension or expansion of the needed services, or resubmit the applications once adequate services and/or funds are available.

Funding of Major Capital Improvements and Public Land Acquisition

Land Transfer Fee

Approximately 1,391 of the 4,417 acres within the Las Positas project area are proposed for public uses. It is proposed that all landowners within the area contribute to a fund used to purchase these public lands in direct proportion to the amount of land under an owner's control. A one time fee would be collected at the time an unsubdivided parcel is sold, or, if a landowner wishes to develop the property, at the time a tentative subdivision map is approved by the County. The same transfer fee would be required if the property is sold directly to a public agency. The County would be the custodian of the Public Land Fund and would distribute the funds to the various public agencies as land purchases are required.

The land transfer fee would be established at roughly 1/3 (1391 /4417) of the value of an acre of unimproved land. On a periodic basis the County, with advice from other agencies, would reevaluate the cost of unpurchased public lands and the ratio of unsold public lands to unsold total lands, and re-establish the land transfer fee to ensure an adequate Public Land Fund.

Development Fee

The primary method to fund capital costs of public facilities is proposed to be a development fee collected at the time building permits are issued. The fees would be collected by the County and held in a Capital Improvement Fund, and would be distributed to the various public agencies as improvements are required. The amount of the fees would be based, in so far as possible, on the average incremental cost of each residential unit or its equivalent in commercial/industrial space. On a periodic basis the County, with advice from other agencies, would re-evaluate the costs of uncompleted public improvements and new capital costs, such as off-site transportation improvements, and re-establish the development fee to ensure a sufficient cash reserve.

Sponsor's Advance

It is proposed that the sponsor provide an advance to cover capital funds and an operating contingency fund for all improvements required prior to occupation of the first house or business. At this time the required advance is estimated to total 14 million dollars. It is intended that the advance cover the following improvements, intended to serve at least through the first two years of development:

- An initial 0.5 mgd wastewater treatment plant, collection system and brine pond.
- Treated water system and open space and storage ponds.
- Water storage tank and initial distribution system.

- Initial major streets, drainage and street lighting.
- Equipment for the first-phase fire station.
- Start-up and operating contingency fund for the wastewater treatment plant.

This advance would be repaid from available surpluses in the Capital Improvement Fund and Public Land Acquisition Fund.

Operating and Maintenance Funding

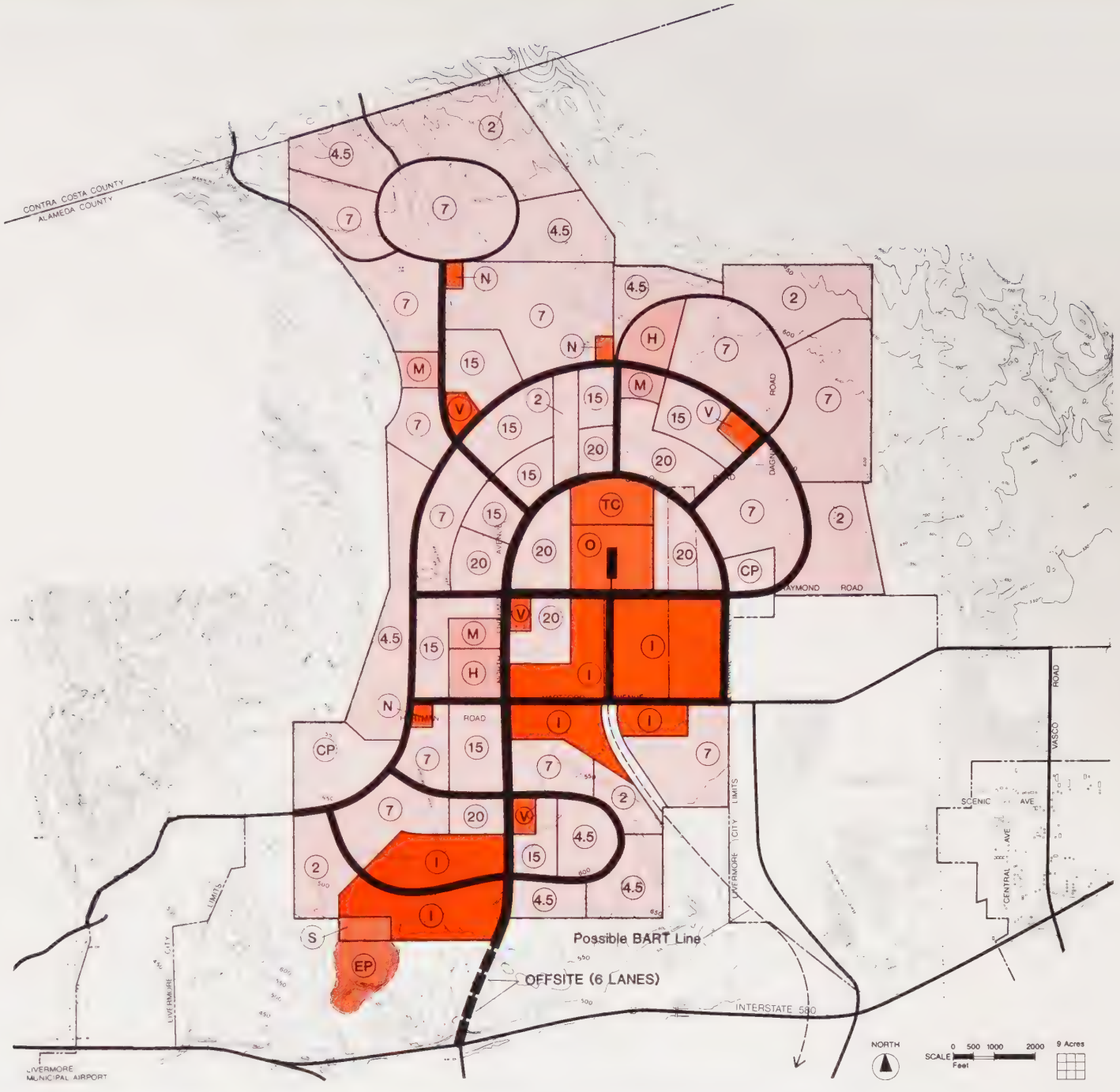
The proposed Las Positas CSA would finance the ongoing operation and maintenance of the sewage system, groundwater management system, water system and street lighting system in Las Positas. The CSA would also administer the capital funds distributed to other agencies. Revenues for the ongoing costs to the CSA would be entirely derived from user charges for services provided by the CSA (or during initial build out from the contingency fund).

Services provided by the County, including those provided on a County-wide basis (general administration, public health, and social services) as well as those urban services typically provided by municipal governments (police protection, fire protection, road maintenance and library services) would be administered and financed through four funds maintained by the County: the General Fund, the Road Fund, the Library Fund, and the Structural Fire Fund.

Las Positas would also be directly served by the Livermore Valley Unified School District, the Livermore Area Recreation and Park District, and the Alameda County Flood Control and Water Conservation District, Zone 7. Ongoing revenues for schools include the property tax supplemented with state aid. Ongoing revenues to LARPD derive from user fees and property taxes. Property taxes would be used by Zone 7 for flood control maintenance on channel improvements. Zone 7 operating revenues for wholesale water to the project would be financed from wholesale water sales to the CSA.

Surplus Tax Revenues and Fees

Project sponsors propose that surplus property tax revenues and fees raised in Las Positas in excess of County or district-wide average per capita taxes or fees, be used to reduce development fees and user charges, make up for deficits experienced by one service when other services are creating a surplus; and finance replacement costs and any additional unforeseen expenses, such as off-site transportation improvements, additional administrative costs and the like.



LAS POSITAS PLAN DIAGRAM

FIGURE 2.1

- 2 — 2 D.U. PER ACRE
- 4.5 — 4.5 D.U. PER ACRE
- 7 — 7.0 D.U. PER ACRE
- 15 — 15 D.U. PER ACRE
- 20 — 20 D.U. PER ACRE
- CP — COMMUNITY PARK
- S — SEWAGE TREATMENT
- EP — EVAPORATION POND
- TC — TOWN CENTER
- V — VILLAGE CENTER
- N — NEIGHBORHOOD CENTER
- O — OFFICE
- I — INDUSTRY
- H — HIGH SCHOOL
- M — MIDDLE SCHOOL



TRANSPORTATION DIAGRAM

FIGURE 2.2

6 — 6 LANE ARTERIAL ROADWAY

4 — 4 LAND ARTERIAL ROADWAY

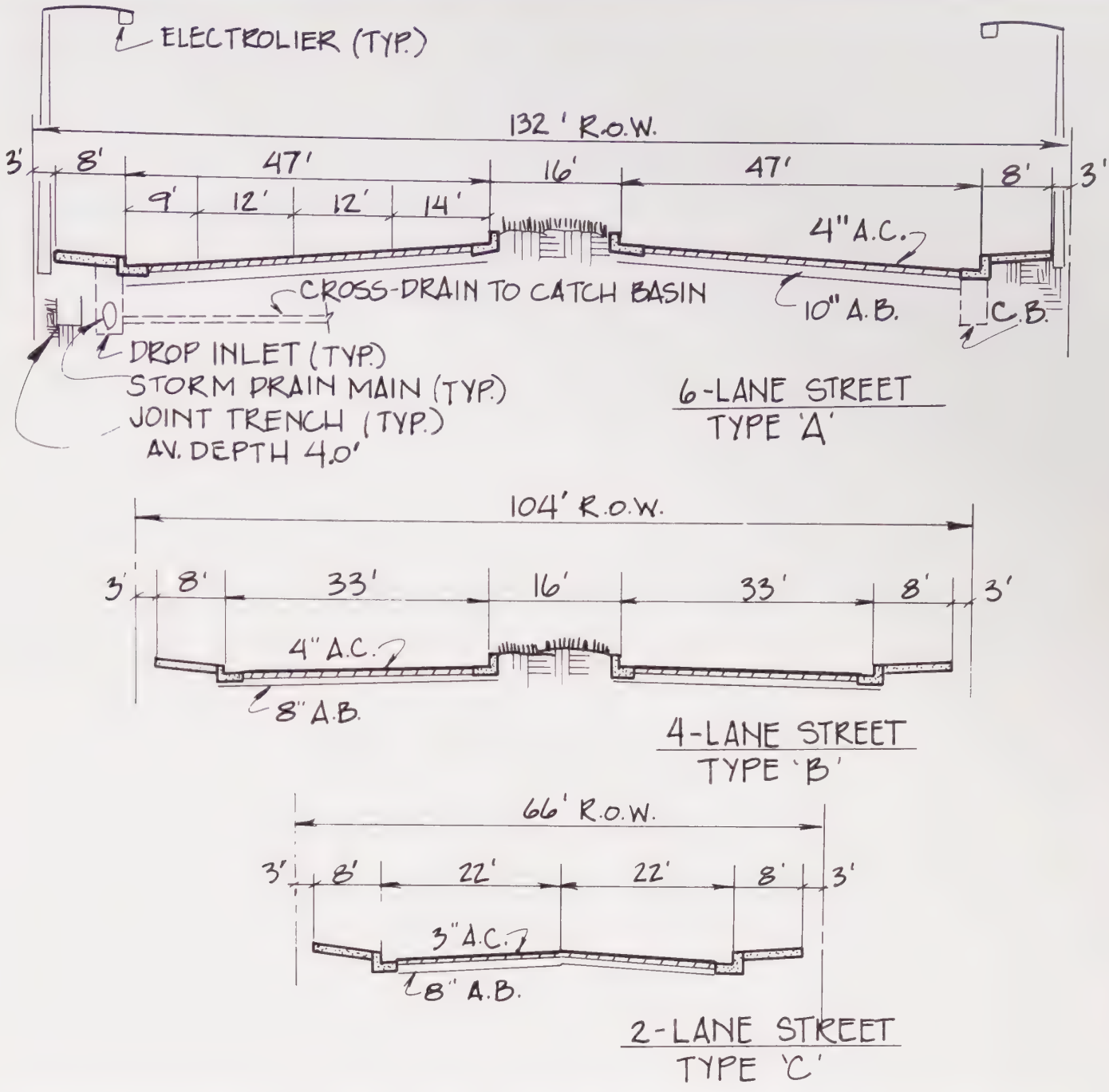
2 — 2 LANE COLLECTOR ROADWAY

(10) — DAILY TRAFFICE VOLUME (ADT), IN THOUSANDS (10 = 10,000)

SIGNALIZED INTERSECTION

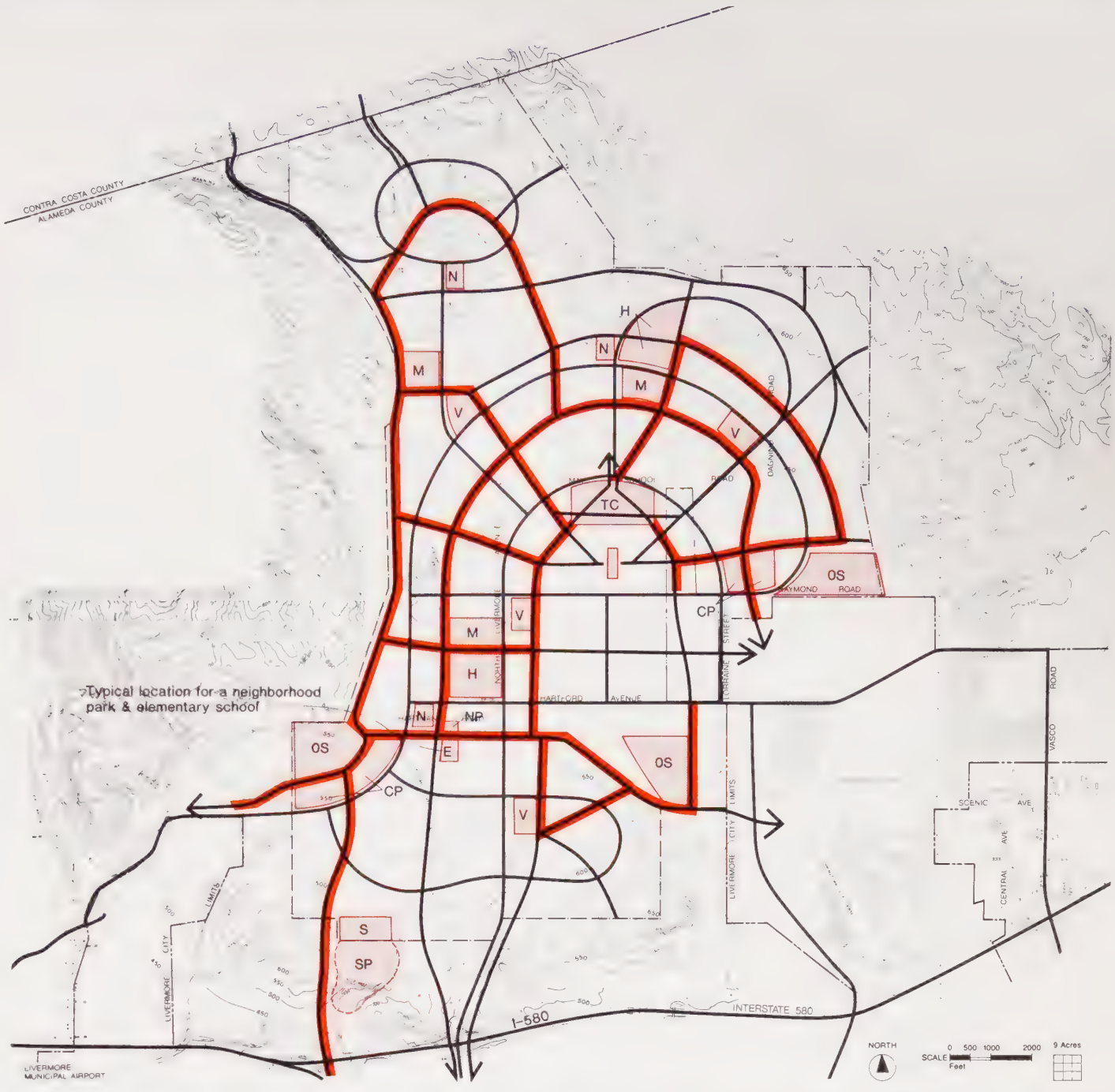
POSSIBLE BUS LINE

POSSIBLE BART LINE



TYPICAL STREET CROSS SECTIONS

FIGURE 2.3



OPEN SPACE DIAGRAM

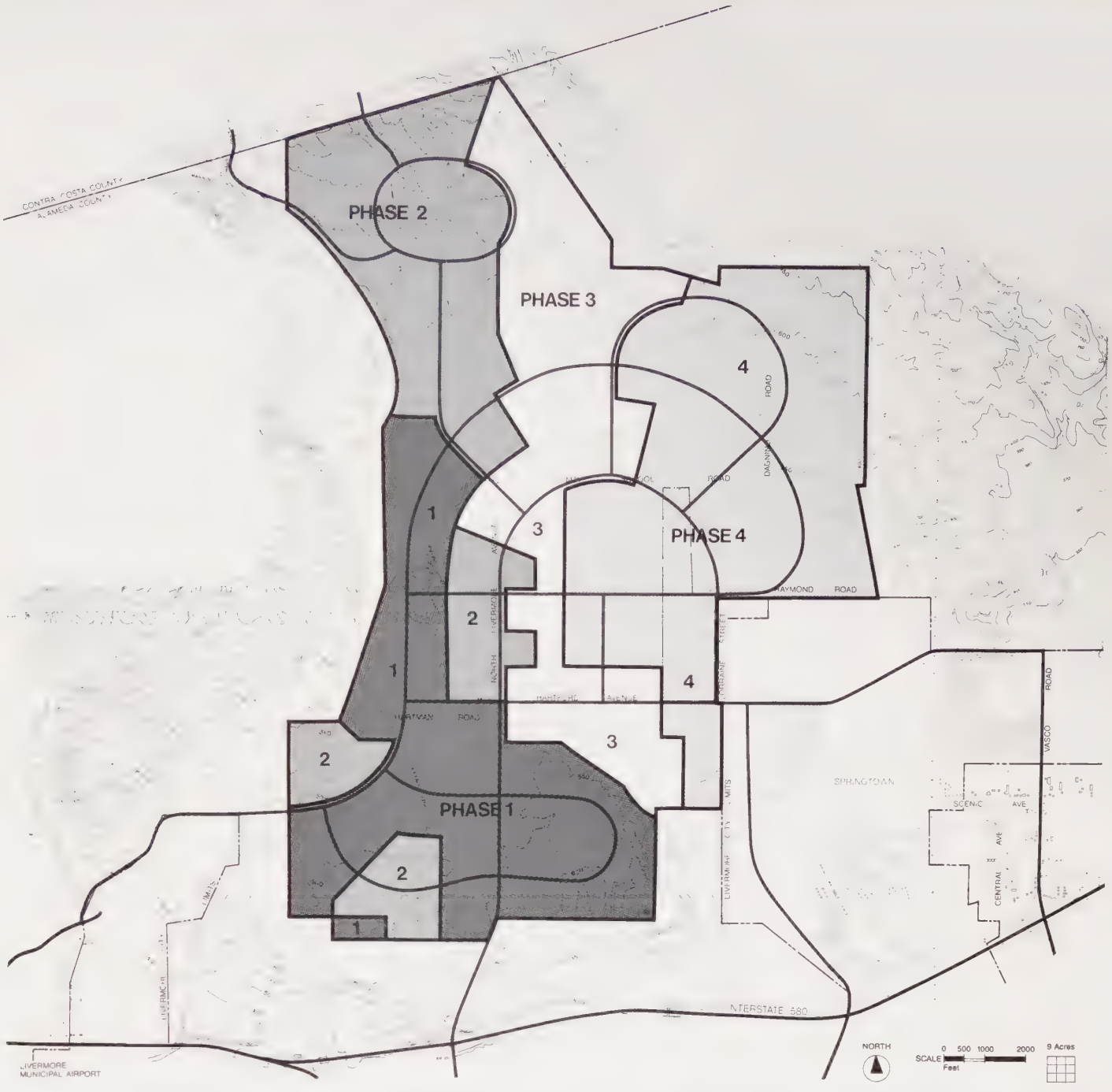
FIGURE 2.4

FOOTPATH NETWORK

OPEN SPACE CORRIDORS, AVERAGE 250 FEET WIDE.

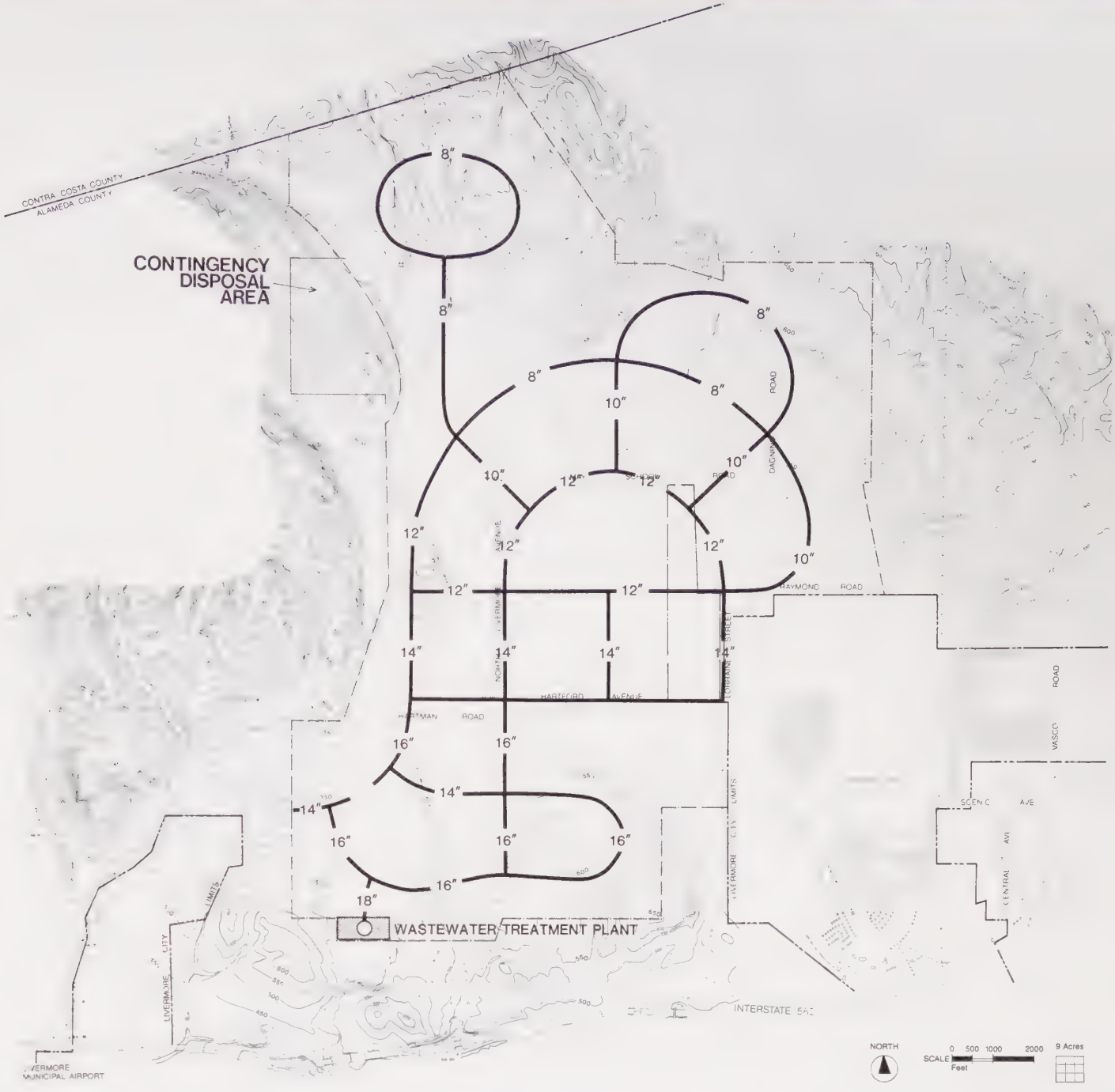
ACTIVITY CENTER*

* REFER TO "LAS POSITAS PLAN" FOR SYMBOL DESCRIPTIONS



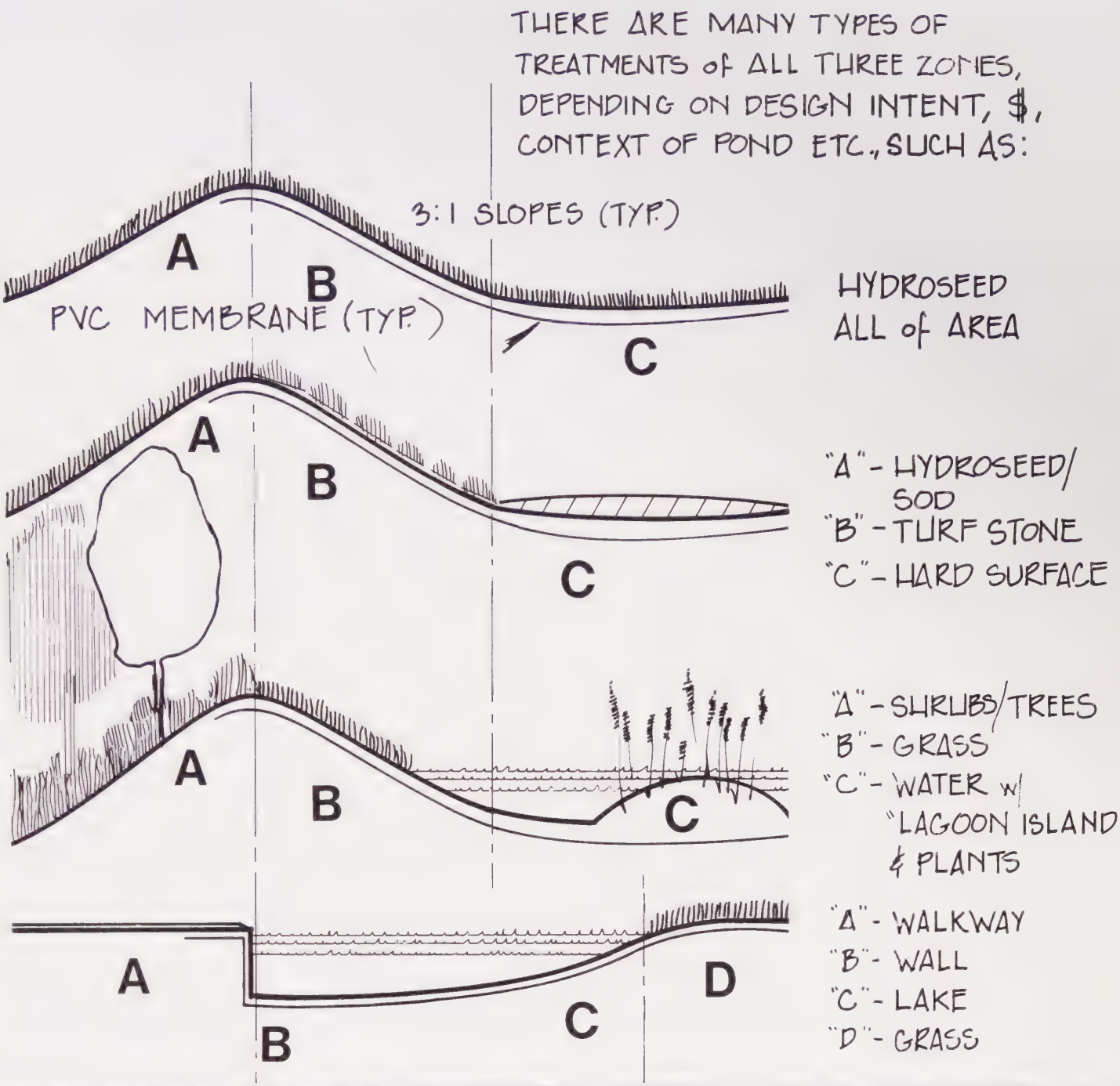
PHASING DIAGRAM

FIGURE 2.5



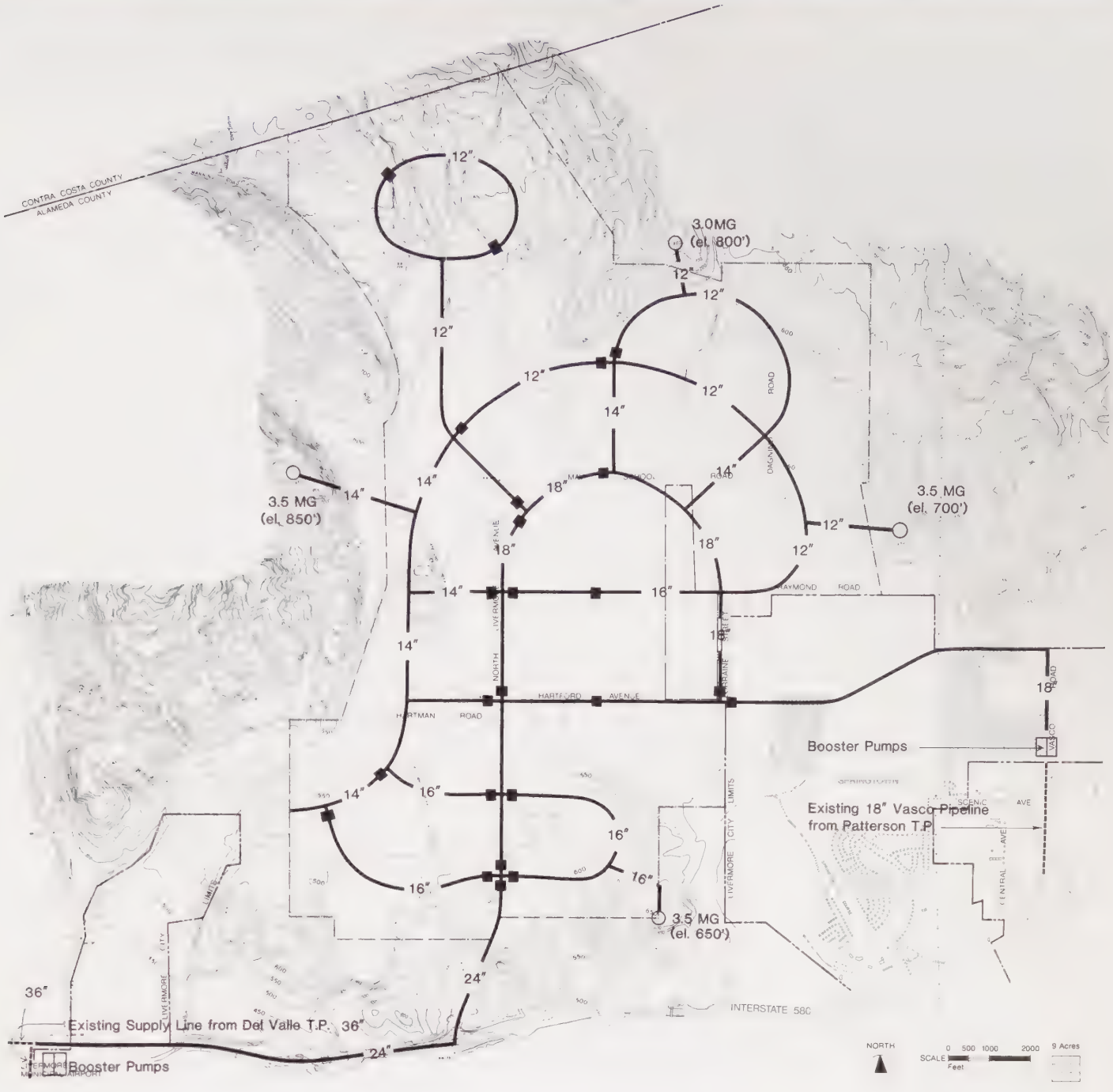
MAJOR WASTEWATER TREATMENT AND COLLECTION SYSTEM

FIGURE 2.6



STORAGE POND CROSS-SECTIONS

FIGURE 2.7



MAJOR WATER SUPPLY AND DISTRIBUTION SYSTEM

FIGURE 2.8

3.0 REGIONAL SETTING

The project site is located in the Las Positas Valley, a physiographic subarea of the larger Livermore-Amador Valley, a large intermontane valley separated from the San Francisco Bay plain to the west, and from the Central Valley, to the east, by highlands and terraces of the Diablo Range (see Figure 3.1). I-580 freeway, which extends west to east through the center of the Valley is the primary linkage between the Livermore-Amador Valley and the Bay plain and Central Valley. I-680 freeway, running north to south along the western edge of the valley, provides connections to communities in the San Ramon Valley area and central Contra Costa area to the north and to Fremont and communities in Santa Clara County to the south.

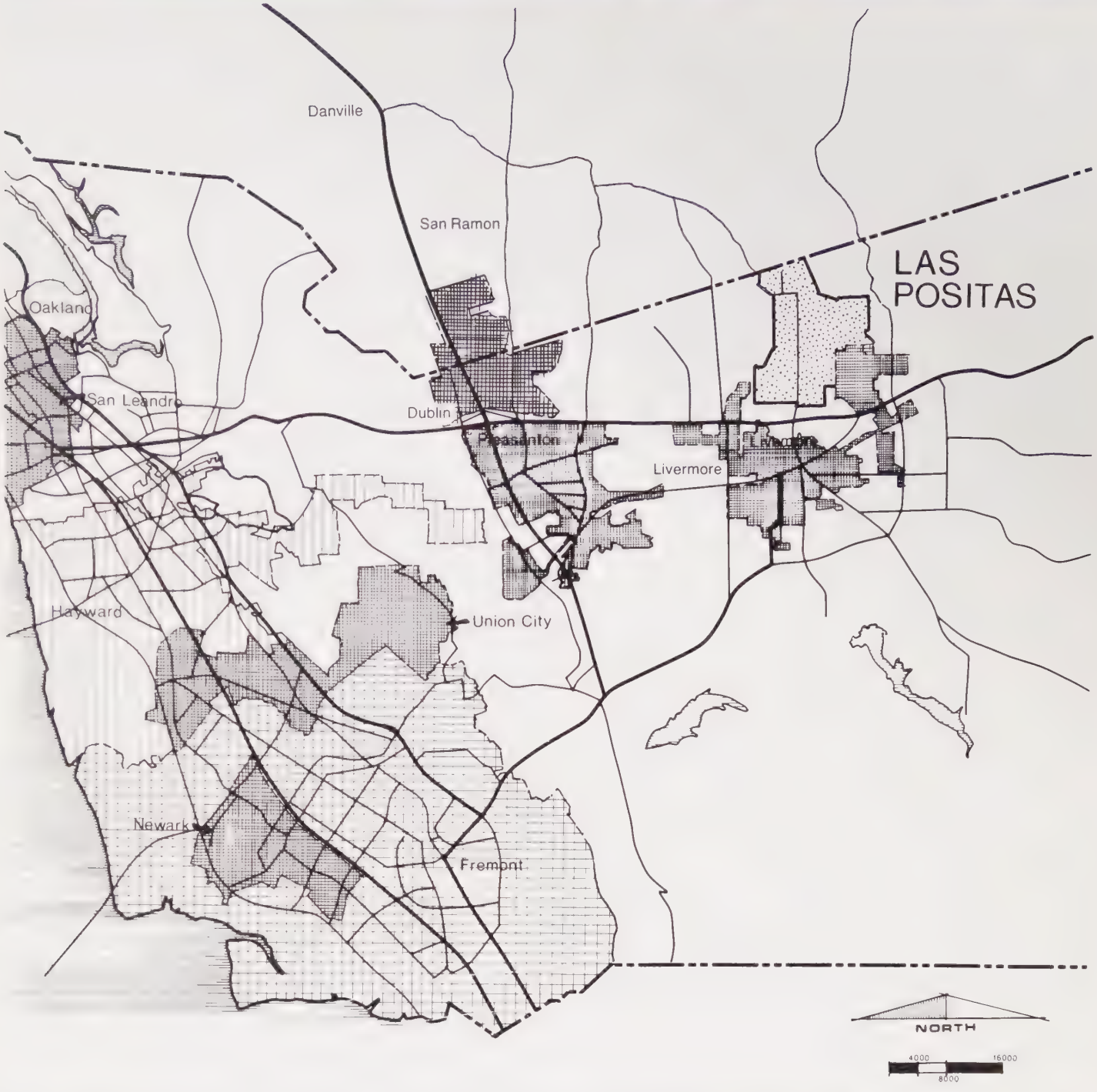
Historically, the Valley has been largely residential, with most residents commuting to employment areas along the East Bay plain. The residential population of the Valley grew very rapidly during the late 1950's and early 1960's, but slowed considerably during the late 1970's due to local service and facilities constraints, and, in particular, sewage treatment and disposal limits. Major population centers are the cities of Livermore and Pleasanton and the recently incorporated city of Dublin.

Recent commercial and industrial construction activity in the Valley as well as significant economic growth in the San Ramon Valley and Central Contra Costa communities to the north suggest that the character of the Livermore-Amador Valley will substantially change through the near future, from a "bedroom" community to that of a major regional employment center. Figure 3.2 illustrates the location of the project site in the Livermore Valley, and Figure 3.3 shows an aerial view of the project site looking south toward I-580 and the city of Livermore.



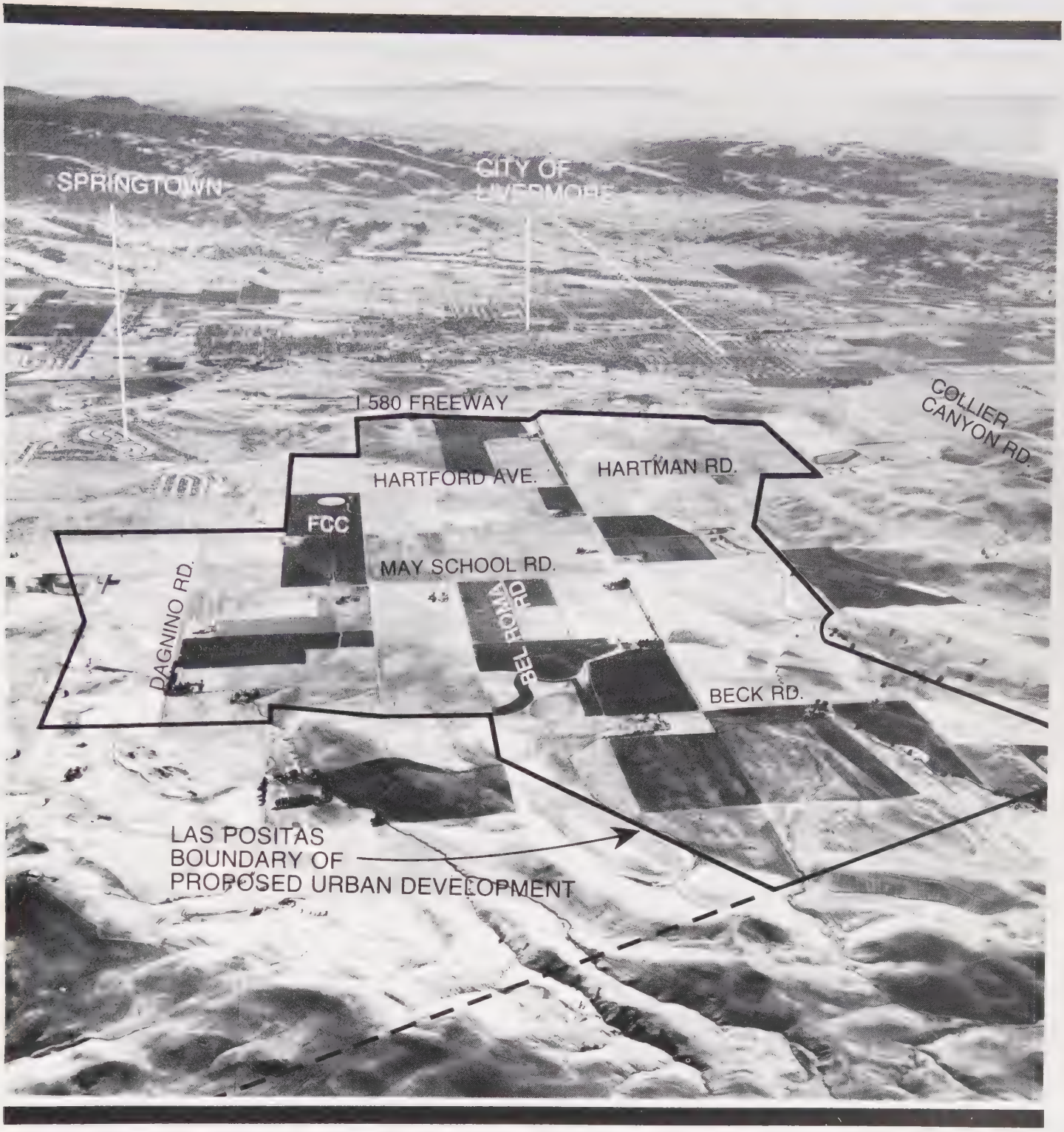
REGIONAL SETTING

FIGURE 3.1



VALLEY SETTING

FIGURE 3.2



AERIAL VIEW

FIGURE 3.3

LAS POSITAS VALLEY LOOKING SOUTH
ALONG NORTH LIVERMORE AVENUE.

4.0 NATURAL ENVIRONMENT

4.1 ATMOSPHERIC CONDITIONS

Setting

Meteorology

The Las Positas site is located in the Livermore-Amador Valley about 40 miles inland from the Pacific Ocean. The general climate is warm and dry during the summer, giving way to mild, moist winters. The marine influence of the Pacific Ocean is evident but is significantly reduced because of the distance inland from the coast.

Temperatures range from the upper eighties (^{o}F) to the low fifties during a normal summer day and from the upper fifties to the upper thirties during a normal winter day. Extreme temperatures have exceeded $110^{o}F$ in the summer and dropped as low as $20^{o}F$ during the winter.

Precipitation averages about 15 inches annually and ranges from 10 to 20 inches. About 60% of the precipitation occurs in December, January and February. The summer months are dry and have minimal precipitation. Prevailing winds are westerly and average wind speeds are from 4 - 6 mph. Winds are calm (less than 2 mph) 15 - 20% of the time.

Weather patterns in the Livermore-Amador Valley are conducive to pollutant buildup, from sources both within and outside the valley. The prevailing westerly winds and the surrounding topography tend to trap pollutants in the valley that are produced in the Bay area. Inversion heights are frequently below the surrounding hills. This combination of meteorology, topography and location of the Livermore-Amador Valley create a high potential for photochemical oxidant problems and, in fact, substantial amounts of this pollutant are found in the valley.

Air Quality

All major pollutants, except hydrocarbons, are being monitored in the Livermore area. Monitoring has been conducted in this area since 1967. The following is a summary of the trends and relationship to the air quality standards shown on Table 4.1.

a. Suspended Particulate

The Livermore area exceeded the State 24-hour standard of 100 ug/m^3 for total suspended particulate each year between 1976 and 1980. No exceedances were recorded in 1981. The Federal Secondary Standard of 150 ug/m^3 has not been exceeded at Livermore since 1978.

b. Sulphur Dioxide

The highest 24-hour value monitored at Livermore was .005 ppm, well within the .05 ppm 24-hour state standard. Sulphur dioxide levels have never exceeded the standards at the Livermore monitoring station.

c. Carbon Monoxide

The maximum eight-hour carbon monoxide concentration recorded at Livermore was 6.8 ppm. The state and federal standard is 9 ppm. Carbon monoxide violations are decreasing in the Bay area, primarily due to decreasing emission from vehicles. Localized violations may continue to occur in isolated areas with high traffic volumes, either present or future. The Las Positas Valley is separated from traffic along I-580, the most significant source of CO in the project area, by about 2,000 feet and a range of hills about 200 feet high. This fact, plus the very low existing traffic volumes currently in the project area, results in little or no background concentrations in the Las Positas Valley.

d. Nitrogen Dioxide

Levels within the Livermore area are below the 0.25 ppm one-hour state standard. The annual standard has never been exceeded in the area and is not expected to be in the future.

e. Photochemical Oxidant

Photochemical oxidants and ozone are secondary pollutants generated from the interaction of hydrocarbons and oxides of nitrogen in the presence of sunlight. Ozone has been monitored at Livermore since 1967. Concentrations have exceeded the one-hour standard every year since monitoring began. The maximum one-hour concentration recorded at Livermore in 1980 was 0.18 ppm. The one-hour standard is now 0.12 ppm. Prior to February, 1979 the one-hour standard was 0.08 ppm.

The standard was exceeded on 53 days in 1969 and only 2 days in 1978 and 1980. The large number of days that exceeded the ozone standard in the late 1960's and early 1970's was due in part to the lower standard in effect at that time.

The maximum one-hour concentration recorded in 1980 at Livermore was .15 ppm.

The high concentrations of ozone at Livermore are due to a combination of location, topography and meteorology. A large portion of the ozone is from hydrocarbons and oxide of nitrogen produced in the Bay area to the west. Prevailing winds transport these pollutants inland to the Livermore-Amador Valley where they are trapped by the surrounding foothills. When added to the pollutants produced within the valley, the probability of violations of the ozone standard becomes very high during the April to October "smog season".

The Bay Area Air Quality Management District has projected that substantial progress will be made to attain the carbon monoxide and ozone standards by 1987. Continued improvements in stationary source emissions would be implemented as the technology becomes available. Emissions from vehicles will continue to decline through 1985 as the regulations on exhaust are fully implemented, and older, higher polluting vehicles are removed from the roads through attrition. After 1985, emission reductions are projected to level off and may begin to increase again, especially in areas that will experience residential or industrial development.

TABLE 4.1

AIR QUALITY STANDARDS AND EMERGENCY CRITERIA

Air Pollutant and Action Required	Air Quality Standards[a]			Emergency Criteria						
		National[b]		California Episode			National Episode			
	California	Primary	Secondary	Stage 1 Health Advisory	Stage 2 Warning	Stage 3 Emergency	Alert Level	Warning Level	Emergency Action Level	Significant Harm To Health Level
Ozone O_3	0.10 ppm, 1-hr. avg.	0.12 ppm (240 ug/m^3) 1-hr. avg.	0.12 ppm (240 ug/m^3) 1-hr. avg.	0.20 ppm, 1-hr. avg.	0.35 ppm, 1-hr. avg.	0.50 ppm 1-hr. avg.	0.10 ppm*** 1-hr. avg.	0.40 ppm 1-hr. avg	0.50 ppm, 1-hr. avg.	0.60 ppm, 1-hr. avg.
Carbon Monoxide CO	10 ppm, 12-hr. avg. 40 ppm, 1-hr. avg.	9 ppm, (10 mg/m^3) 8-hr. avg. 35 ppm, (40 mg/m^3) 1-hr. avg.	9 ppm, (10 mg/m^3) 8-hr. avg. 35 ppm, (40 mg/m^3) 1-hr. avg.	20 ppm, 12-hr. avg. 40 ppm, 1-hr. avg.	35 ppm, 12-hr. avg. 75 ppm, 1-hr. avg.	50 ppm, 12-hr. avg. 100 ppm, 1-hr. avg.	15 ppm, 8-hr. avg.	30 ppm, 8-hr. avg.	40 ppm, 8-hr. avg.	50 ppm, 8-hr. avg. 75 ppm, 4-hr. avg. 125 ppm, 1-hr. avg.
Nitrogen Dioxide NO_2	0.25 ppm, 1-hr. avg.	0.05 ppm, (100 ug/m^3) AAM	0.05 ppm, (100 ug/m^3) AAM	**			0.15 ppm, 24-hr. avg. 0.60 ppm, 1-hr. avg.	0.30 ppm, 24-hr. avg. 1.2 ppm, 1-hr. avg.	0.40 ppm, 24-hr. avg. 1.6 ppm, 1-hr. avg.	0.50 ppm, 24-hr. avg. 2.0 ppm, 1-hr. avg.
Sulfur Dioxide SO_2	0.05 ppm,* 24-hr. avg. 0.50 ppm, 1-hr. avg.	0.14 ppm, (365 ug/m^3) 24-hr. avg. 0.03 ppm, (80 ug/m^3) AAM	0.50 ppm, (1300 ug/m^3) 3-hr. avg.	0.20 ppm, 24-hr. avg. 0.50 ppm, 1-hr. avg.	0.30 ppm, 24-hr. avg. 1.0 ppm, 1-hr. avg.	0.60 ppm, 24-hr. avg. 2.0 ppm, 1-hr. avg.	0.30 ppm, 24-hr. avg.	0.60 ppm, 24-hr. avg.	0.80 ppm, 24-hr. avg.	1.0 ppm, 24-hr. avg.
Ozone In Combination With Sulfur Dioxide[d]				0.20 ppm, 1-hr. avg.	0.35 ppm, 1-hr. avg.	0.50 ppm, 1-hr. avg.				
Sulfate In Particulate Matter	25 ug/m^3, 24-hr. avg.			25 ug/m^3, 24-hr. avg. combined with Ozone, 0.20 ppm, 1-hr. avg.						
Particulate Matter (TSP)	100 ug/m^3, 24-hr. avg. 60 ug/m^3 AGM	260 ug/m^3 24-hr. avg. 75 ug/m^3 AGM	150 ug/m^3 24-hr. avg. 60 ug/m^3 AGM				375 ug/m^3 24-hr. avg.	625 ug/m^3 24-hr. avg.	875 ug/m^3 24-hr. avg.	1000 ug/m^3 24-hr. avg.
Particulate Matter (ug/m^3) x SO_2 (ppm) x 2620							65,000 24-hr. avg.	261,000 24-hr. avg.	393,000 24-hr. avg.	490,000 24-hr. avg.

* Occuring in combination with a violation of the State Ozone or TSP standards.

** No standard or criteria when blocks are blank.

*** This is inconsistent with the federal standard of 0.12 ppm, hourly average, and is expected to be revised in the near future.

(Continued)

TABLE 4 (Continued)

AIR QUALITY STANDARDS AND EMERGENCY CRITERIA

Air Pollutant and Action Required	Air Quality Standards[a]			Emergency Criteria						
		National[b]		California Episode				National Episode		
	California	Primary	Secondary	Stage 1 Health Advisory	Stage 2 Warning	Stage 3 Emergency	Alert Level	Warning Level	Emergency Action Level	Significant Harm To Health Level
Lead Pb	1.5 ug/m^3 30-day avg.	1.5 ug/m^3 calendar quarter average								
Hydrocarbons (corrected for methane)		0.24 ppm (160 ug/m^3) 3-hr. avg. 6-9 a.m.	0.24 ppm (160 ug/m^3) 3-hr. avg. 6-9 a.m.							
Hydrogen Sulfide H_2S	0.03 ppm. 1-hr. avg.									
Vinyl Chloride (chloroethene)	0.01 ppm 24-hr. avg.									
Ethylene	0.10 ppm 8-hr. avg. 0.50 ppm 1-hr. avg.									
Visibility Reducing Particles	In sufficient concentration to reduce visibility to less than ten miles at relative humidity of less than 70%.									
Actions to be Taken				Voluntary reduction in physical activity and vehicle operation. Open burning banned (not an action at this level after 1978).	Action ranges from voluntary to mandatory.	Mandatory abatement measures. State can take action if local efforts fail.	Open burning prohibited. Requested reduction in vehicle operation. Industrial Curtailment.	Incinerator use prohibited. Required reduction in vehicle operation. Industry curtailed further.	Vehicle use prohibited. Industry shut down or curtailment. Public activities cease.	Same as "Emergency" except most industry shut down.

a) Standards shown in parenthesis are restatements of the preceding standard but expressed on an alternative basis.
b) Concentrations other than annual averages not to be exceeded more than once a year.

d) Ozone and sulfur dioxide concentrations both must be greater than 0.10 ppm.

Source: 1979 Bay Area Air Quality Plan, January 1979

Impacts

Impacts to air quality would occur from both stationary and mobile sources if the project is approved. There would be short-term emissions due to construction activity during the development phases. Long-term stationary source emissions would come from space heating, fireplace and cooking activity and other activities associated with residential, commercial and light industrial development. The majority of long term pollutant emissions, up to 90%, would be from vehicular activity resulting from the development.

Short-Term Impacts

Short-term impacts would be created from construction activity during the development of the proposed project between 1985 and 2005. Emissions would be from three sources: 1) vehicle emissions from construction equipment and trucks; 2) suspended particulate from activity on disturbed sites and unpaved roads; and 3) wind-blown fugitive dust from disturbed areas where no activity may be occurring.

Vehicle Emissions

Vehicle emissions from construction vehicles would have a minor effect on air quality when compared with vehicle activity anticipated after the project is completed.

Suspended Particulate

Construction activity has the potential for increasing the suspended particulate levels in localized areas. Disturbed areas, especially during the dry summer months, would generate dust from construction activity and from wind-blown fugitive dust. Areas subject to increased levels of suspended particulate would shift as developments in the proposed project progress. Increased levels of suspended particulate would cause temporary inconvenience to adjacent development but would cease on completion of construction activity in each proposed project subarea.

During project construction, emissions from unpaved roads would be about 0.3 lbs. (125 gm)/VMT. BAAQMD calculates the emission factor from paved roads to be 2.3 gm/VMT.

Emissions of suspended particulate from construction activities would be about 1.2 tons/acre/month.

The emission from agricultural tilling (the present use) is estimated at 72.3 lbs./acre.

The projected project build-out rate is approximately 5% or 200 acres per year. This then assumes that 5% of the roads are unpaved while the 200 acres are under construction. Therefore, the annual emissions of suspended particulate from 200 acres are estimated as follows:

Existing emission (agricultural) = 7.2 tons/year
Construction emissions (with watering) = 120 tons/year
Emissions from unpaved roads = 63 tons/year
Emissions from paved roads = 1.1 tons/month = 13.2 tons/year total

The Bay Area Annual Air Quality Report concludes that heavy construction activity can increase the annual mean by up to 10 ug/m^3 or more. From the preceding calculation, the total emission would increase by about 175 tons/month in areas under construction. This emission level would increase the particulate concentrations in the vicinity of the construction. Dust emissions would cease upon completion of construction and paving of adjacent roads.

The Bay Area Air Quality Management District controls suspended particulate emissions through their nuisance and visible emissions regulations. Builders would be expected, at a minimum, to water construction sites periodically. Watering can reduce emissions of suspended particulate up to 50%.

Long-Term Impacts

Long-term air quality impacts would begin to occur as the proposed project was implemented in 1985 and would continue to increase through the 2005 anticipated completion date. Emissions would be generated from both stationary and mobile sources. Depending on the pollutants, these emissions would have either local or regional impacts. Pollutants with primarily local impacts on air quality include suspended particulate and carbon monoxide. Hydrocarbon and oxides of nitrogen, as precursors to ozone and oxidant formation, have greater impacts on regional air quality. Oxides of sulfur, which have impacts on both local and regional air quality would not be expected to be emitted in significant quantities from any sources in the proposed project and are not further evaluated.

The methodology used to calculate air quality impacts is described in the "Supplemental Information on the Air Quality Analysis for the Las Positas Environmental Impact Report," Wilsey & Ham, May, 1982. A copy of this report is on file with the Alameda County Planning Department. That report is included, by reference, as a part of this EIR.

Oxides of Nitrogen

The principal pollutant emitted from stationary sources is oxides of nitrogen from fuel combustion. Based on current emission factors it is estimated that oxides of nitrogen from the completed project could reach about 0.5 ton/day on a cold day. Other pollutants would be emitted from stationary sources at a rate of less than 0.1 ton/day. The oxides of nitrogen emissions would not affect the formation of ozone in the Livermore area since the emissions occur during the winter months when ozone formation is least likely to occur.

Emissions with a local impact are primarily suspended particulate and carbon monoxide. Suspended particulate emissions come primarily from construction activity, as described earlier. Unpaved roads and areas would also contribute to suspended particulate emissions. EPA estimates of probable emissions indicate that in this locale vehicles would produce up to 0.3 lbs./vehicle mile of dust from unpaved roads. On a regional basis the entire Livermore-Amador Valley is now exceeding the suspended particulate ambient air standard. The proposed project is not expected to significantly add to or improve the existing situation over the long term.

Carbon Monoxide

The pollutant having the major local impact is carbon monoxide (see Table 4.2). The principal source of the pollutant is vehicle activity. Pollutant concentrations are here estimated using projected traffic volumes employing the CALINE 3 line source diffusion model. Estimates of concentrations in the vicinity of the town center are supplemented with an area source model described by Hanna (see reference). Traffic volumes used are described in the transportation section. Emission factors used are obtained from the Bay Area Air Quality Management District.

TABLE 4.2
PREDICTED CARBON MONOXIDE CONCENTRATIONS WITHIN THE PROJECT
(ppm)

	N. Livermore Avenue N. of I-580		Adjacent to Town Center				
				Peak Hour			
Year	Peak Hour	Max 8 Hour	Adjacent Street	Area Contribution	Total	Max 8 Hour Total	8 Hour Standard
1990	0.6	0.4	0.5	0.6	1.1	0.8	9
1995	1.8	1.3	0.9	1.1	2.0	1.4	9
2000	3.5	2.5	1.3	1.7	3.0	2.1	9
2005	10.4	7.3	1.8	2.4	4.2	2.9	9

Assumptions:

1) Both models assume 'E' stability and wind speeds of 1 meter/second (2 mph) for "worst case" peak hour conditions.

2) Line source model wind angle to roadway was 10^{o} (parallel wind).

3) Receptor location was at the edge of the right-of-way - about 15 meters from the roadway centerline.

4) Area source model assumes a three-minute idle time per vehicle.

5) Maximum eight-hour concentrations are approximately 70% of peak hour concentrations, based on both the ratio of traffic volumes and historical data trends.

Table 4.2 shows the maximum expected carbon monoxide concentrations inside the project area that would result from the proposed project. The highest concentrations would be located on North Livermore Avenue between I-580 and the southern boundary of the project. These concentrations, however, would not be expected to exceed the eight-hour standard. Through the year 2000, traffic volumes within the project will continually increase but would not significantly reduce traffic speeds. At final development the streets are expected to exceed capacity during peak traffic hours. Speeds would drop as low as 5 mph in the southbound lanes, resulting in higher emission levels. The eight-hour concentration is predicted to reach 7.3 ppm as a result of the congestion that would be created along North Livermore Avenue. I-580 may contribute up to an additional 0.5 ppm to these concentrations in the vicinity of the freeway. [1]

The town center area would experience the highest overall VMT density per square mile of any area within Las Positas. A background of 2 to 2.5 ppm could establish itself here, which would be in addition to the concentrations indicated in Table 4.2. Assuming a 2 ppm background is possible in 2005, the total predicted eight-hour concentration in the vicinity of the town center would increase to 4.9 ppm, still below the 9 ppm eight-hour standard. Maximum concentrations in other portions of the project are not expected to exceed 3 ppm at any time with full development except for areas immediately adjacent to North Livermore Avenue.

Table 4.3 shows the maximum eight-hour carbon monoxide concentrations expected in the year 2005 outside the project area. Three locations were analyzed for a no project condition, and for Las Positas without transportation mitigation. (See Section 5.8 -Transportation Services and Facilities, for more details.) The predicted eight-hour concentrations along I-580 from Airway Boulevard to El Charro Road is just slightly below the standard of 9 ppm if Las Positas is developed without transportation mitigation measures. In all other locations analyzed, Route 84 between I-580 and Portola and New Collier Canyon Road between I-580 and New Road "A", predicted CO concentrations are well below eight-hour standards with or without transportation mitigation measures. The addition of a background concentration along this sector could result in the standard being exeeded. In all other locations analyzed, Route 84 between I-580 and Portola and New Collier Canyon Road between I-580 and New Road "A," predicted CO concentrations are well below eight-hour standards with or without transportation mitigation measures.

[1] The background concentration in addition to this is expected to be low because of the low density of development in the vicinity of this sector. A background concentration of 1.2 ppm could be tolerated before that 9 ppm eight-hour standard is reached.

TABLE 4.3 a

PREDICTED CARBON MONOXIDE CONCENTRATIONS OUTSIDE THE PROJECT[1] in 2005 (ppm)

Location	Without Las Positas	With Las Positas Without Transportation Mitigation
I-580 - Airway Boulevard to El Charro Road	1.5	8.7
Route 84 - I-580 to Portola	0.8	5.7
New Collier Canyon Road - I-580 to New Road "A"	0.7	1.4

[1] The maximum eight-hour standard is 9.0 ppm

Source: Wilsey & Ham

Note: The same assumptions were used as shown on Table 4.2.

As indicated, estimated CO concentrations inside and outside the project are based on traffic assumptions described in Section 5.7: that is, that approximately 60 percent of the peak-hour traffic and 65 percent of the daily volumes would remain entirely within the development. Changing VMT estimates to decrease internal and increase the external peak-hour traffic volumes by about 20% would have corresponding impacts on CO concentrations. The resultant line concentrations in Table 4.3a at I-580 between Airway Boulevard and El Charro Road would increase from 8.7 ppm to 10.4 ppm eight-hour average in 2005 if the proposed Las Positas was developed with no transportation mitigation. This would exceed the proposed 9 ppm standard. Other locations and conditions described would also increase, but would remain within the eight-hour standard with the alternative VMT estimate.

The effects of proposed Transportation System Management strategies resulting in a maximum 25% reduction in Las Positas traffic volumes, and of proposed facilities improvements outlined in Section 5.7, are in Table 4.3b.

TABLE 4.3 b

PREDICTED CARBON MONOXIDE CONCENTRATIONS (PPM)
OUTSIDE THE PROJECT, IN 2005
WITH LAS POSITAS TSM [1] AND WITH
PROPOSED FACILITIES IMPROVEMENTS [1]

Location	With Transportation System Management (25% Maximum Reduction in Las Positas Volumes)	With TSM Proposed Facilities Improvements
I-580 - Airway Boulevard to El Charro Road	3.1	3.1
Route 84 - I-580 to Portola	1.3	0.8
New Collier Canyon Road - I-580 to New Road "A"	1.2	1.2

[1] See Section 5.7
Source: Wilsey & Ham

Hydrocarbons

Hydrocarbons interact with oxides of nitrogen in the presence of sunlight resulting in the formation of ozone. At the present time, research indicates that ozone concentrations are more dependent on hydrocarbon emissions than oxides of nitrogen emissions. Therefore, the emissions of hydrocarbons should give a reasonable indication of the potential for ozone production in both the Primary Market Area and in the Central Valley to the east of (downwind from) the PMA.

Emissions of hydrocarbons occur from mobile and stationary sources. Each contributes about half the total emissions of hydrocarbons in the Bay Area. Both are declining due to control regulations. Emissions from both sources are expected to level off about 1985, and start to rise again thereafter.

The current analysis for the Las Positas proposal concentrates on mobile emissions[1], on the assumption that these would be representative of stationary source emission changes also occuring in the Livermore-Amador and San Ramon Valleys, the Project Primary Market Area (PMA). Estimates of current (1980) Vehicle Miles Traveled (VMT) for the PMA are derived. Data and projections from the Metropolitan Transportation Commission (MTC) related to countywide (Alameda County) VMT are interpolated to determine values for the PMA, using the ratio of population projections for the two areas. It is assumed that average trip length for PMA traffic in the PMA is close to the county average, and would remain so through the projection period.

Alameda County VMT (from MTC)
1980 - 14.53 million miles/average weekday

[1] General organic emissions are projected to be approximately 2.5 metric tons per day from stationary sources in Las Positas, at buildout. Any significant amounts of Hi-Tech industrial development would increase these emissions. For example, if 5,000 jobs in the proposed industrial park areas were in Hi-Tech industries, projected organic emissions would increase by approximately 1.25 metric tons per day.

Population estimates are extrapolated from ABAG's Projection 79, which served as a basis for the MTC projections.

	1980
Alameda County	1,105,400
PMA	159,500
Ratio: PMA/County	.1443

Estimated VMT for the Primary Market Area is therefore estimated as follows:

1980: 14.54 M x .1435 = 2.097 million miles/average weekday

This estimate for the PMA may be somewhat low, given 1) the greater distance between PMA communities and employment areas elsewhere in the region; 2) the lower average density of development in the PMA; and 3) the current, lower ratio of jobs to housing.

The net impact of the proposed Las Positas Development on PMA would depend upon the assumptions made regarding its role in providing both housing and employment. Two scenarios are evaluated here: These vary as to the assumed net effect of Las Positas on overall employment levels in the PMA; in Scenario 1, it is assumed that Las Positas would represent a net addition of 22,000 jobs to the PMA; in Scenario 2, it is assumed that Las Positas would result in a redistribution of "basic" employment projected in the PMA, such that it would capture approximately 19,000 basic jobs which, without the project, would otherwise occur elsewhere in the Valley. The component of local serving component (approximately 3,200 jobs in 2005) would in Scenario 1 and 2 constitute a net addition of jobs to the PMA. In both, it is also assumed that the total housing provided by Las Positas (18,000 units at buildout) would be an addition and not a redistribution of that projected for the PMA. Assumptions for the PMA are extrapolations to year 2005 of projections indicated in Sections 5.1 and 5.2. Total housing units (without Las Positas) would total approximately 93,500 units. Year 2005 employment is projected to total approximately 45,000 jobs, based on the "trend projections" in Section 5.1.

Year 2005	**Scenario 1**	**Scenario 2**
PMA		
Total Housing Units	111,500	111,500
Total Jobs	106,400	87,400
Las Positas		
Total Housing Units	18,000	18,000
Total Jobs	22,200	22,000
Basic	19,000	19,000
Local Serving	3,200	3,200

Based on the total projected VMT in the PMA and the change in VMT due to Las Positas, the hydrocarbon emissions are estimated in Table 4.4 for both Scenarios. The emissions assume that inspection/maintenance does not occur. The hydrocarbon emission rates would reach a minimum between 1985 and 1990 and then begin to rise again under both sets of forecasts.

Table 4.4

Las Positas Primary Market Area
Hydrocarbon Emissions from Mobile Sources, 2005

	Total PMA VMT -2005	VMT due to Las Positas	Hydrocarbon Emissions Metric Tons per Day	
			Total PMA Las Positas	Percent Las Positas
Scenario 1	3,910.000	210,600	6.71	5.07
Scenario 2	3,690,000	210,600	6.35	5.35

Source: Wilsey & Ham

The proposed project could reduce the length of inter-valley work-related trips because residents would be located close to employment centers. However, this reduction in inter-valley trips would be offset by the increase of trips created by non-job-related activity within the project. As a result hydrocarbon emissions would be approximately 5 percent greater in the year 2005 if the project is developed.

The Primary Market Area is currently exceeding the ozone standard approximately twice annually. Based on the emission rates of hydrocarbons for the ABAG '79 forecasts, it is expected that attainment of the ozone standard should be achieved by 1985. By the year 2000, emissions in the PMA would cause the ozone standard to shift back to non-attainment status. It is estimated that the contribution of Las Positas would cause the standard to be exceeded approximately one year earlier than it would without the project. This shift back to non-attainment is expected to occur in the early to mid-1990's.

Studies have determined (Glasson - see references) that hydrocarbon reduction will reduce ozone in urban as well as downwind locations. Therefore, maintenance of the ozone standard will be more dependent upon control of hydrocarbon emissions from both stationary and mobile sources. Oxides of nitrogen control will have a lesser effect.

Mitigation

Mitigation of suspended particulate levels can be achieved to some degree through compliance with the dust suppression techniques including:

- Watering or oiling unpaved areas during construction to reduce dust generation.
- Revegetation of graded or vacant land with ground cover if construction activities are postponed, reducing wind erosion and fugitive dust emissions.

- o Suspending grading operations in high winds to reduce wind erosion and fugitive dust emissions.

Specific mitigative techniques would be specified on a project by project basis as part of the zoning and building approval process. Long-term reduction of emissions, principally carbon monoxide and hydrocarbons from vehicles, could be achieved through: reduction of vehicle miles of travel, reduction of the number of vehicle trips or implementation of more stringent emission controls on vehicle exhaust. A number of mitigation measures targeting vehicular use are listed in the Transportation Section; these include:

- o Road, interchange and highway improvements to reduce traffic congestion.

- o Local transit service within and connecting Las Positas to other urbanized areas.

- o Reserving right-of-way within the proposed project area for a possible BART or bus extension and supporting facilities.

- o Encouraging ride-sharing programs and preferential parking programs for participants.

- o Encouraging staggered or flexible working hours.

Implementation of more stringent emission controls would require changes in current legislation. Partial mitigation of air quality impacts could be achieved through land use strategies incorporated into the project (e.g., provision of commercial and public services and facilities convenient to residences, provision of both employment and housing opportunities) and through transportation control strategies. Most effective mitigation of the development would require implementation of more stringent emission controls on vehicles and stationary sources.

The CO concentrations are estimated for the proposed project using traffic volumes and speeds assuming no transportation mitigation measures were implemented. As discussed in the transportation section, Transportation System Management (TSM) measures would reduce traffic volumes and congestion by approximately 25 percent, thereby reducing local air quality impacts. An example of the effectiveness of these measures to reduce CO concentrations outside the project area are shown on Table 4.3.

4.2 BIOLOGIC CONDITIONS

Setting

Historic Biologic Community

The basic biologic community of the Livermore Valley region is the valley grassland community. In its pristine condition, the grasslands extended from the valleys up into the hills and contained few trees. In general, trees were concentrated along the edge of watercourses where they formed riparian (located on bank) habitats (Figure 4.1, Specimen Trees). The long dry summer season was the primary climactic condition responsible for maintaining the grassland vegetation. This vegetation was dominated by perennial bunch grasses, purple needlegrass (Stipa pulchra), and nodding needlegrass (S. cernua). Other species included blue wild-rye (Elymus glaucus), pine bluegrass (Poa scabrella), deergrass (Muhlenbergia rigens), beardless wild-rye (Elymus triticoides) and, later, an introduced annual wild oat (Avena fatua). There was also a variety of non-grass annuals and perennials that flowered after the winter rains and dominated the landscape during those brief periods.

Animal life was dominated by burrowing and grazing species. The common mammalian wildlife were the pronghorn (Antilocapra americana), mule deer (Odocoileus heminous), California ground squirrel (Spermophilus beecheyi), black-tailed jackrabbit (Lepus californicus), kangaroo rat (Dipodomys sp.), and the major predator, the coyote (Canis latrans).

Early land use, prior to the 1850's, took advantage of the grassland conditions and developed grazing land for cattle which provided hides, tallow, and some beef. Later, sheep were raised for wool. Gradually the better lands were taken over to produce grain crops such as wheat, barley, and oats, and later, with irrigation, fruit crops. With this new land usage, some of the larger mammals diminished in number or disappeared altogether from the grasslands. Heavy grazing and the success of introduced annual grass species caused perennial bunchgrasses to be replaced by annual grasses.

Present-Day Vegetation

Nearly all of the Las Positas Valley area has been influenced by agricultural practices such as crop cultivation and grazing. Oat hay production is a common practice in the region. The relative value of vegetative habitats is depicted in Figure 4.2, Natural Habitat. Common vegetative species in the area are determined to a great extent by the types of soils present. A list of common plant species which are known or expected to be found on the project site is contained in Table 4.5.

TABLE 4.5

COMMON PLANT SPECIES IN THE LAS POSITAS AREA

Common Name	Scientific Name
*Club canarygrass	Phalaris paradoxa
Needlegrass	Stipa spp.
Pine bluegrass	Poa scrabella
*Soft chess	Bromus mollis
Ryegrass	Lolium spp.
*Wild oats	Avena fatua
*Filaree	Erodium spp.
Burclover	Medicago hispida
Tomcat clover	Trifolium spp.
Cow clover	Trifolium spp.
Spanish clover	Trifolium spp.
Squirrel tail	Sitanion spp.
Red brome	Bromus spp.
Ripgut brome	Bromus spp.
Annual fescue	Festuca spp.
Mouse barley	Hordeum murinum
*Lupine	Lupinus spp.
Poison oak	Rhus diversiloba
*Fiddleneck	Amsinckia spp.
Tarweed	Hemizonia spp.
Gumweed	Madia spp.
*Wild mustard	Brassica spp.
*Thistle; compositae	Cynareae spp.
Wild carrot	Daucus carota
Soapplant	Chloragalum pomeridianum
Tarweed	Madia spp.
Creeping wildrye	Elymus spp.
Dryland sedge	Rhynchospora spp.
Nitgrass	Gastridium ventricosum
*Popcorn flower	Plagiobothrys tenellus
*Star thistle	Centaurea solstitialis
*Black locust	Robinia Pseudo-Acacia
*Valley oak	Quercus lobota
*Live oak	Quercus agrifolia
*Eucalyptus	Eucalyptus globulus
*Tamarisk	Tamarix spp.
*Cypress	Cupressus spp.

*Species identified from field observations.

Source: James A. Roberts Associates, Inc.

Three species of plants which are classified as endangered by The California Native Plant Society are known to exist in Alameda County and near the site. Fiddleneck (Amsinckia grandiflora), is found on open grassy slopes below 1,200 feet in the inner Coast Range and adjacent valley. A member of the mustard family (Tropidocarpum capparideum), is found in grassland regions and low hills to 500 feet (Munz, 1968). These endangered plants have never been abundant in this region. A cluster of fiddleneck was found on the University of California property near Tesla Road just east of Livermore. The Tropidocarpum has been sighted on the Altamont Pass Road near the old railroad station (Knight, 1973). No stands of these endangered plants are known to exist in the project site area. However, because of the proximity of the known stands and the scarceness of these species, it is possible that there are unreported stands on the property.

Several large colonies and scattered individuals of the palmate-bracted bird's beak (Cordylanthus palmatus) occur along the eastern boundary of the Las Positas site, just south of the intersection of Hartford Avenue and Lorraine Street. This plant is a California endemic species associated with alkali sink habitat. Although saline-alkali conditions occur to the north and west of this area, the surrounding lands have been cultivated and/or heavily grazed; no Cordylanthus palmatus or suitable habitats were identified elsewhere in the Las Positas project area. Cordylanthus palmatus is designated as Rare and Endangered by the California Native Plant Society. The California Department of Fish and Game has placed Cordylanthus palmatus on its list of plants under consideration for listing under the Native Plant Protection Act, and the U.S. Wildlife Service has determined that Cordylanthus palmatus is an appropriate candidate for listing by the federal government as an endangered or threatened species. Cordylanthus palmatus has been previously identified in low-lying areas along Altamont Creek and Arroyo Las Positas in the Springtown area of Livermore, adjacent to the Las Positas area.

Habitat Areas

There are basically four habitat types found in the project site area: agricultural, grassland, savanna, and aquatic. The value of these habitats to wildlife varies greatly with the seasons, both in their inherent value and their importance in their interrelationship with the others. All these habitats have greater value to wildlife in late fall, winter, and spring because of the availability of water at those times. The summers are usually dry, water availability is reduced, and annual plants die. Figure 4.2, Natural Habitat, outlines relative value of habitats in the area of the proposed new community.

a. Agriculture Habitat

This type, as defined here, includes all areas of cultivated crops, grazing lands, and ranch and farm houses. The habitat value of these areas varies with the amounts of cover, food, and water available. For example, an oat hayfield provides excellent cover only until it is harvested. Desirable habitat diversity in the form of trees is often found near ranch and farmhouses. At the present time, near buildings on the site, there are several oak and eucalyptus trees which are particularly valuable to birds.

b. Grassland Habitat

The grassland habitat includes the grass-covered hillsides, fallow fields, and much of the grazing land. It consists largely of annual plants that die and turn brown in the summer. Many grassland animals move to moister habitats or go into aestivation (a kind of summer sleep) at this time. During the wet seasons, the grasses are green and lush, providing excellent habitat. Small mammals, reptiles, birds, and insects are especially predominant wildlife species. Larger mammals and amphibians are less common and are found during the wet seasons. The grassland and agricultural habitats together cover the vast majority of the project area.

c. Savanna Habitat

The savanna habitat is basically grassland with a few scattered oak trees. These trees provide roosting sites for predatory and other birds, shade, and some food and cover values for a variety of animals. Wildlife characteristics of the habitat are similar to those described for grasslands, but larger mammals such as the deer and coyote are more frequent here. Although this habitat type is very limited in the study area, almost to the point of being insignificant, it is found extensively nearby on the higher hill ridges. Many of the oak trees on the properties are found along drainages.

TABLE 4.6

A PARTIAL LIST OF COMMON WILDLIFE SPECIES IN THE PROJECT AREA

Common Name	Scientific Name
Mammals	
Black-tailed deer	Odocoileus hemionus
Coyote	Canis latrans
Gray fox	Urocyon cinereoargenteus
Striped skunk	Mephitus mephitus
*Black-tailed jackrabbit	Lepus californicus
Audobon cottontail	Sylvilagus auduboni
Pocket gopher	Thomomys bottae
California ground squirrel	Spermophilus beecheyi
Western harvest mouse	Reithrodontomys megalotis
Deer mouse	Peromyscus maniculatus
Birds	
Turkey vulture	Cathartes aura
Sparrow hawk	Falco sparverius
Red-tailed hawk	Buteo jamaicensis
*Mourning dove	Zenaidura macroura
Common crow	Corvus brachyrhynchos
Yellow-billed magpie	Pica nuttalli
Mockingbird	Mimus polyglottos
*Brewer blackbird	Euphagus cyanocephalus
House finch	Carpodacus mexicanus
*Meadowlark	Sturnella neglecta
California quail	Lophortyx californicus
*Killdeer	Charadrius vociferus
Golden Eagle	Aquila chrysaetos canadensis
Prairie Falcon	Falco mexicanus
Reptiles	
Western fence lizard	Sceloporus occidentalis
Coast horned lizard	Phrynosoma coronatum
Western skink	Eumeces skiltonianus
Rubber Boa	Charina bottae
Racer	Coluber constrictor
Gopher snake	Pituophis melanoleucus
Striped Racer	Masticophis lateralis euryxanthus
Amphibians	
Western toad	Bufo boreas
*Bullfrog	Rana catesbeiana

*Identified in the field by direct observation or field signs.
Source: James A. Roberts Associates, Inc.

c. Aquatic Habitat

Aquatic habitats include all areas of seasonal or permanent water in the project area such as Las Positas, Altamont, and Cayetano Creeks, and other artificial or natural ponds and channels. Aquatic and streamside vegetation is limited and associated primarily with the natural creek channels. All of the natural creeks are intermittent and dry up for part of the summer. Evidence of drainage swales and vernal pools (seasonal ponds which accumulate winter and spring stormwater and support distinctive flora) was noted in the grasslands.

Whenever water is present, this habitat is very valuable to most wildlife forms. This value becomes particularly important during the dry season (when surrounding areas turn brown) because of the water, green vegetation, and lower temperatures which it affords. It provides an important "oasis" for many species. Amphibians and fish are virtually confined to this habitat.

Wildlife Species

Table 4.6 is a partial list of the more common wildlife species which are known or can be expected to occupy one or more habitats on the project site for at least part of the year.

Black-tailed deer do not occur in large numbers in this area due to the lack of suitable cover and forage. Summer densities of 0 to 1 deer per square mile can be expected with slightly higher densities in other seasons.

This site is located within the known range of the Alameda striped racer (Masticophis lateralis euryxanthus), a species classified as rare by the California Department of Fish and Game. According to the Department " . . .this racer occurs in the valleys, foothills, and low mountains east of San Francisco Bay. It is usually associated with chaparral, but may occur in grassland, open woods, and rocky slopes." One of the major reasons for the decline of the racer has been a reduction in suitable habitat in recent years due to construction and development. It feeds on frogs, lizards, snakes, small mammals, birds and insects. Although it is not possible to state with certainty whether this species is or is not occupying the project site area, the range and habitat criteria are favorable.

The project area is within the foraging range of the golden eagle (Aquila chrysaetos canadensis) and the prairie falcon (Falco mexicanus). Neither species are classified as rare and endangered by the Department of Fish and Game, although both are regionally depleted. The exact populations of these species in the project vicinity is not known; however, reported year-round sitings and nearby nesting sites positively indicate the presence of both. Prairie falcon nests are known to exist within two miles of the proposed Las Positas Development. The foraging range of the falcon is within a five-mile radius of the nesting site; a juvenile bird would require a foraging area closer to the nest (eg. one to three miles). Golden eagle nesting sites are known to exist within four miles of the proposed development. The foraging range of juveniles is one to five miles; the range of adults is greater but not specifically known. During the winter months, the populations of both species increases as birds from harsher climates move into the area seeking food and warmer temperatures (the project area and vicinity also provides winter forage for the bald eagle--Haliaeetus leucocephalus which is classified as rare and endangered). This factor may be more critical to the overall survival of the prairie falcon and the golden eagle than the location of specific nesting sites in the area, since the greatest depletion of available food occurs during the winter.

The San Joaquin Kit Fox, listed in the California State Register of rare species and federal list of endangered species, has been sited in Mount Diablo State Park and near Bethany Reservoir, respectively to the north and northeast of the project area. The Kit Fox habitat consists of heavy brush, so it is unlikely that there are any present in the agricultural lands of the project area. It is possible that they travel through the project area, although they have not been sited.

Impacts

Direct/On-Site

Vegetation

The overall character of the vegetative community in the project area would change significantly with development of the project community. Agricultural and native species would virtually be eliminated from developed areas and replaced with predominantly exotic landscaping species.

The proposal calls for retaining specimen oak, eucalyptus, locust, and cypress trees wherever possible. Although it may be necessary to remove a few of these trees, this possibility cannot be quantitatively assessed at this time. The proposal also calls for preserving vegetation along most water courses in the area. Some of this vegetation would be disturbed, however, by stream crossings necessary for vehicle and pedestrian traffic.

Because it has not been determined if A. grandiflora or T. capparideum, known to exist near the project area, actually grow within the proposed project boundary, an assessment of impacts on these plants cannot be made at this time. Although they may grow within the area, the probability of numerous stands in the area is low.

The Cordylanthus palmatus habitat would be impacted by development of the site, and by any change in the chemical constitution of the soil or significant changes in drainage through the site. Development of this part of the Las Positas area (proposed for 7 units per acre residential) would result in elimination of the Cordylanthus palmatus colonies and the habitat which supports them. Construction activities in the area would remove the plants. Drainage improvements would redirect surface water and eliminate or change seasonal supplies of water.

Wildlife

Many of the native animal species now inhabiting the project site would be displaced as urban development progresses. Most of these would still occupy the "fringe" areas next to development; others, primarily some birds and small rodents, would be able to adjust to microenvironments within the urbanized areas. Those species that cannot adjust, however, would be displaced and their populations reduced. Included among these species are the coyote, gray fox, hawks and owls.

The Las Positas proposal calls for maintaining some aquatic habitats, but some physical disturbance would be necessary for traffic crossings over streams, and for recreational use in some locations. These changes and greatly increased numbers of people would disturb wildlife habitats. This disturbance would be detrimental, but not significantly destructive of those habitat areas.

Potential impacts upon the rare Alameda striped racer cannot be determined at this time due to a lack of sufficent information regarding its status in the project vicinity. There is a fairly good possibility that this species is present (Figure 4.3) since the range and habitat criteria are favorable.

The loss of agriculture and grassland habitats within the project area will adversely affect the prairie falcon and golden eagle whose year-round and seasonal foraging areas include the project area. The quantitive impacts cannot be determined due to limited information on resident and seasonal populations of these species.

Off-Site/Indirect Impacts

Potential increases in runoff, erosion and sedimentation resulting from the project could contribute to the need for flood control projects downstream from the project; these control improvements could threaten existing riparian habitats (eg. along Arroyos Las Positas and de La Laguna, and Alameda Creek). However, as indicated in Section 4.4, due to project area topographic and hydrologic conditions, it is expected that maximum flows from the Las Positas area would not coincide with peak flows in Arroyo Las Positas, such that the increase in the maximum discharge in Arroyo Las Positas resulting from the development would be minor.

Mitigation Measures

Vegetation

Most changes in project area vegetation resulting from the proposed development would be unavoidable. Some mitigation of project impacts on the more significant habitat areas, existing natural creek channels, vernal pools, habitat areas of Cordylanthus palmatus and, if determined to be present, of A. grandiflora and T. capparidcum could be achieved through the dedication of these areas as open space, and through ongoing programs to protect and maintain the habitat areas and to minimize direct or indirect disruption resulting from activities during and after construction.

Investigations, to date, have been limited; the most recent by ESA Madrone focused primarily on habitat suitable for Cordylanthus palmatus. They confirm that several other sensitive plant species and their habitats are likely to occur in the Las Positas study area. A complete biological reconaissance of the entire site should therefore be completed to determine the nature and extent of these. An area natural resources plan could, in turn, be developed in coordination with the U.S. Fish and Wildlife Service, the California Department of Fish and Game, the California Native Plant Society and other concerned agencies.

Potential damage resulting from erosion and sedimentation may be minimized by a number of procedures. These include, but would not be limited to:

- Restrictions on all grading, filling and clearing to limit these activities to the dry season of the year;
- Limitations on the amount of development each year, in order to minimize the occurrence of sudden, massive impacts;
- Prohibitions of development in areas with slopes greater than 15 percent and/or those determined to have soil erosion hazards;
- Design of road alignments to avoid steep, unstable slopes and to minimize the need for cuts and fills;
- Development of revegetation plans, particularly in areas where natural revegetation is slow;
- Requirements that adequate topsoil be left, or returned to construction sites, particularly on the Linne series; and
- Development of specific plans for the control and handling of all runoff.

Wildlife

Most adverse impacts on wildlife in the project area would be unavoidable. Some mitigation could result through protection of open space, creek channels and corridors, and of hilly (15% slope or greater) areas within and adjoining the development.

As indicated, a complete biological reconnaissance of the entire site should be conducted to supplement the surveys completed to date. This survey would not, in itself, constitute mitigation but could permit the development of an area natural resourses plan incorporating input from the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and other concerned public agencies and private organizations.

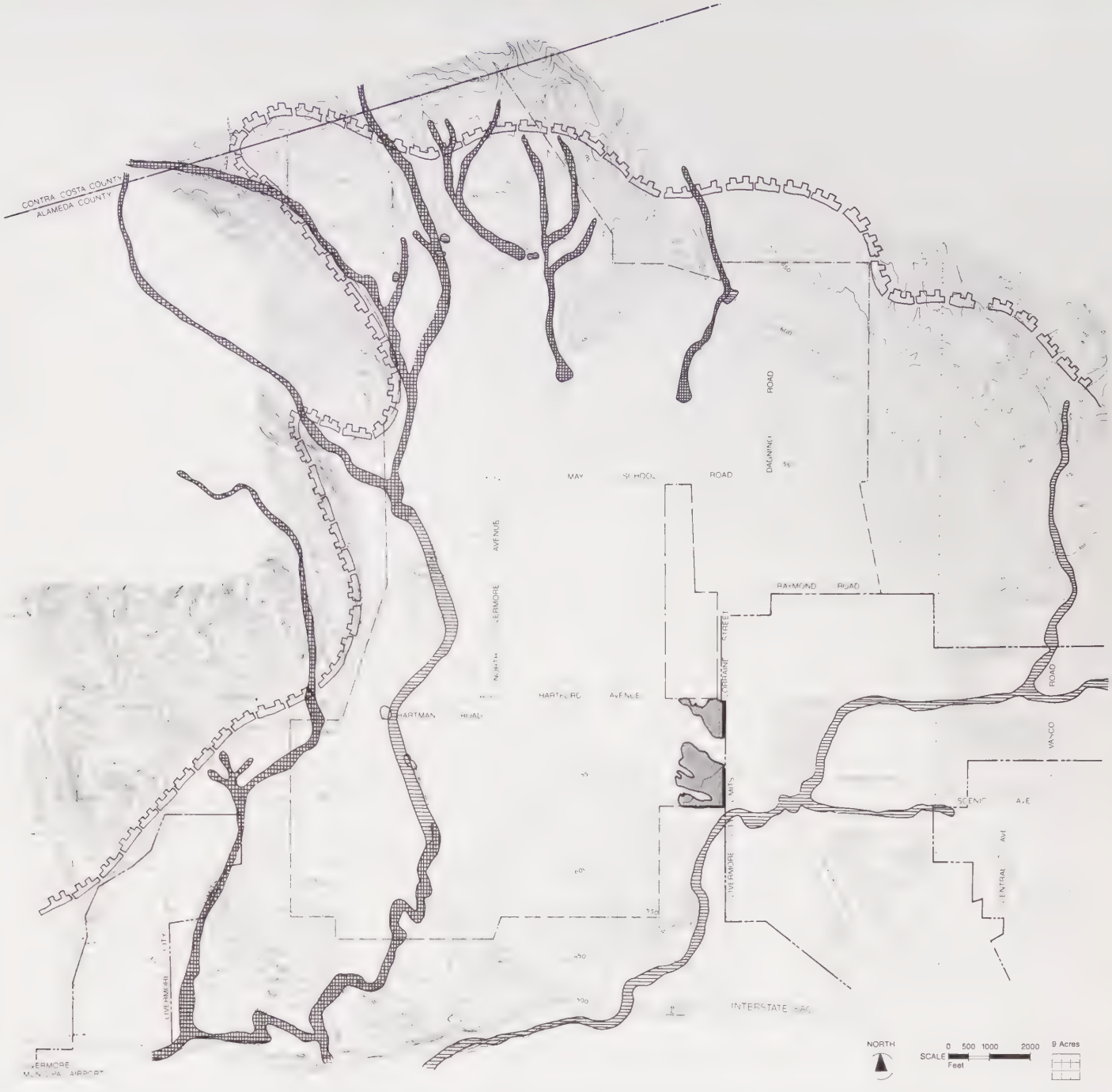


SPECIMEN TREES

FIGURE 4.1

- (O) NATIVE OAKS
- (E) EUCALYPTUS (SOME FROST DAMAGE)
- (L) LOCUST
- (C) CYPRUS
- (ME) MIXED EXOTICS (CONFINED TO EXISTING RESIDENCES)

SOURCE: JAMES A. ROBERTS, ASSOCIATES
FIELD INVESTIGATION 8/27/73



NATURAL HABITAT

FIGURE 4.2

RELATIVELY HIGH VALUE VEGETATIVE AND WILDLIFE HABITAT

CHANNELIZED CREEKS

NATURAL CREEKS AND TREES

FOOTHILL AREAS

APPROXIMATE EXTENT OF CORDYLANTHUS PALMATUS

SOURCE: JAMES A. ROBERT, ASSOCIATES

ALAMEDA STRIPED RACER
(Masticophis **lateralis euryxanthus**)



DESCRIPTION: The Alameda Striped Racer is a slender, fast-moving snake with a narrow neck and relatively broad head with large eyes. It is black or brown on its back side, with a distinct orange strip down one side to or beyond the vent. The forward portions of the ventral surface are orangy, and the posterior portions are cream to pinkish. Adults grow to three to four feet in length.

DISTRIBUTION: This racer occurs in the valleys, foothills and low mountains east of San Francisco Bay. It is usually associated with chaparral, but may occur in grassland, open woods, and rocky slopes.

STATUS: Rare. This is considered one of the rarest snakes in the East Bay region. The habitat has been greatly reduced in recent years by construction and development.

Source: California Department of Fish and Game, At the Crossroads, A Report on California's Endangered and Rare Fish and Wildlife, Sacramento, California, 1972.

ALAMEDA STRIPED RACER FIGURE 4.3

4.3 GEOLOGIC CONDITIONS

Setting

The geotechnical data summarized below has been collected from a number of published and unpublished reports (see Bibliography).

Geologic Units

The proposed Las Positas project area is underlain by several distinct geologic units. Figure 4.4 is a geologic map showing the distribution of these units.

The broad valley floor is underlain by relatively young Alluvium (Qa) composed of unconsolidated sands, gravels, silts and clays deposited by streams. Older terrace deposits (Qt) are present at the north end of the project area. These alluvial deposits are relatively thin (less than 100 feet thick) and are underlain by the older units described below.

The low hills along the southern portion of the project area are composed of Livermore Gravels (QTl) which are poorly consolidated, coarse gravels, sands and clays. The hills west and north of the project area are composed of Orinda Formation (Tps) claystones and conglomerates. Tassajara Formation (QTt) mudstones are exposed farther west. The hills to the northeast are composed of Neroly (Tn) and Cierbo Formation sandstones (Tmss) and claystones (Tmcs). (Refer to the Technical Report for descriptions of these units.) The hills farther east are composed of Panoche Foundation sandstone (Kps) and claystone (Kp).

Structural Relationships, Folding and Faulting

The Livermore Valley (of which the Las Positas Valley is part) is the center of a structural depression of "down-dropped block" in the northern portion of the Diablo Range. The "Livermore Block" is bounded on the west by the active Calaveras-Sunol Fault and on the east by the active Greenville Fault. The active Las Positas Fault bounds the block on the south and the uplifted Tassajara Hills bound in on the north. Several other faults with undetermined activities have previously been mapped as crossing the Livermore Valley.

The geologic units in the Las Positas development area have been folded and faulted to various degrees. A number of northwest trending folds have been inferred in both the Orinda Formation and the Livermore Gravels. Observations of bedding plane attitudes (strikes and dips) and interpreted fold axes are shown on Figure 4.4. The alluvium is essentially flat lying. Mapped and suspected faults (as well as air-photo lineaments of undetermined origin) are also shown on Figure 4.4.

The active Greenville Fault Zone is located 3,000 feet northeast of the Las Positas development project boundary. This fault zone was the source of several damaging earthquakes in January, 1980. A small amount of surface displacement (1 to 2 inches horizontal) occurred along several traces within the fault zone (Bonnilla; 1980 and Hart; 1981). Refer to subsequent section on SEISMICITY for further discussion.

The California Department of Water Resources (DWR; 1974) mapped the "Carnegie" Fault[1] running parallel to the Greenville Fault and crossing the northeast portion of the project site. This fault is shown connecting to an unnamed short fault previously mapped by Huey (1948) as crossing the southern end of the ridge north of Dalton Avenue on the east side of the project area.

The "Tesla" Fault[2] was mapped by DWR (1974) along the base of the northeast facing, linear, scarp-like slope in Section 33 where alluvium is in contact with older materials. Herd (1978) and Dibblee (1980) both mapped a fault as concealed along the same linear feature DWR indicated. However, Herd and Dibblee did not extrapolate the fault to the southeast nor extend it to the northwest into the hills. Rather, both Herd and Dibblee mapped a concealed fault segment (slightly different traces) turning to the north in Section 29. Neither Herd nor Dibblee assigned names to these fault segments.

Sweeney (1982) used oil well data and geologic mapping south of Las Positas Valley to conclude that the western segment of the original Tesla Fault was offset from its connection with the type of locality of the "ancestral Greenville Fault". Sweeney suggests that the real Tesla Fault is probably buried beneath Livermore Valley somewhere south of Interstate 50. Sweeney extended his "ancestral Greenville Fault" to the northwest through Section 33 coincident with DWR's "Tesla" Fault as well as Dibblee's and Herd's unnamed faults.

Wright (1982) mapped air photo lineaments west of the main Greenville Fault Zone. Cooper & Clark (1982) mapped a large number of air photo lineaments on the valley floor between the Greenville Fault and DWR's "Tesla" Fault. It is not known whether or not these features are fault-related.

Geodetic measurements (Alt, 1979) suggest that subsidence is occurring in the Las Positas Valley between the "Carnegie" and "Tesla" Faults. Seismic reflection profiles collected by Hersey Oil near Lawrence Livermore Labs reveal discontinuities in reflecting horizons which may be coincident with the observed photo-lineaments (Sweeney, personal communication, 1981).

Magnetometer and resistivity profiles collected along traverses which crossed these suspected faults are available. Most of the lineaments have some expression in the magnetic profiles as minor "steps" or "troughs". These anamolies indicate material discontinuities which could be faults.

An alternative explanation for some of the observed lineaments is that they could be the surface expressions of ancient, abandoned and filled-in channels of Cayetano Creek. Another possible explanation is that subsidence (from vibratory consolidation of the alluvium or tectonic down-warping of the basin) may have caused tension fractures to develop parallel to the axis of the basin (Cooper & Clark, 1982).

1 Quotes are used here because the type locality where the Carnegie Fault was named is 6 miles south on the east side of the Greenville Fault. The fault named "Carnegie" by DWR is probably a trace of the Greenville Fault.

2 The fault labeled "Tesla" by DWR is also not connected to the type locality for the Tesla Fault (9 miles southeast on the east side of the Greenville Fault).

Seismicity

The proposed Las Positas development site is located within the California Coast Range Geomorphic Province which has been deformed by regional compressive forces and contains many active[1] faults. Figure 4.5 shows the major fault zones in the San Francisco Bay Region. Historically, some of these faults have released accumulated elastic strain energy causing damaging earthquakes in the region. The most notable historic earthquakes and their probable source faults are listed in Table 4.7.

The Las Positas project site would be strongly shaken by a major earthquake on any of the principal, active Bay Area or Livermore Valley faults. Shown in Table 4.8 is a record of earthquake activity in the vicinity of the proposed project.

TABLE 4.7

NOTABLE HISTORIC EARTHQUAKES
IN THE SAN FRANCISCO BAY REGION

Date	Fault	Rupture Length (km)	Richter Magnitude
June 10, 1836	Hayward	Unknown	6.5
Late June, 1838	San Andreas	Unknown	7.0
July 4, 1861	Calaveras-Sunol	Unknown	5.3
October 8, 1868	San Andreas (peninsula)	Unknown	6+
October 21, 1868	Hayward	30	6.7
April 24, 1980	San Andreas	10	5.9
April 18, 1906	San Andreas	430	8.2
August 6, 1979	Calaveras	14.4 - 21	5.7
January 24, 1980	Greenville	4.2 - 6.2	5.5*
January 26, 1980	Greenville	1.1	5.8*

Source: Earthquakes of 1838-1906 are referenced in Toppozada and others (1979) and Wesson and others (1975). Earthquakes of 1979 and 1980 are discussed in Herd, et al (1979), Lee and others (1980), Bonnilla et al (1980), and Cockerham, et al (1980).

*U.C. Berkeley

[1]An active fault is one which shows evidence of having ruptured during the last 11,000 years.

Active regional faults include the San Andreas Fault System located about 36 miles southwest of the project site, the Hayward Fault located about 12 miles southwest and the Calaveras Fault, 7 miles west. Maximum magnitude earthquakes which are expected from these active regional faults are 8.5, 7.0, and 7.3 respectively (Wesson and other, 1975). It is estimated that typical horizontal bedrock accelerations expected at the site from earthquakes of these magnitudes would be in the range of 0.30 to 0.34g. (These bedrock accelerations should not be considered as structural design values because of topographic effects and soil-structure interactions.)

Active local faults within the Las Positas Valley include the Las Positas Fault located about four miles southeast of the site and the Greenville Fault located about one mile to the east (Herd, 1977; Carpenter and other, 1980).

The Greenville Fault zone was the source of two damaging earthquakes experienced on January 24 and 26, 1980. The Richter magnitudes for these events were in the range of 5.3 to 5.9 (Cockerham and others, 1980). Peak accelerations recorded or estimated at various Livermore and San Ramon Valley locations during these earthquakes are listed in Table 4.9. Discontinuous minor surface faulting was experienced in an area east of the project site extending from the vicinity of the Alameda-Contra Costa County line to about southeast I-580 (Bonnilla and others, 1980).

TABLE 4.9

STRONG MOTION DATA FOR VARIOUS LIVERMORE AND SAN RAMON VALLEY LOCATIONS, JANUARY 24 AND 26, 1980 EARTHQUAKES

	Jan. 24, 1980			Jan. 26, 1980		
	Dist. from Epicenter (km)	Location	Peak acc. (g)	Dist. from Epicenter (km)	Location	Peak acc. (g)
Eastman Kodak, San Ramon	16	grnd roof	0.15 0.24	21	grnd roof	0.28 0.47
Fire Station, San Ramon	19	grnd	0.04	24	grnd	0.05
Fidelity Savings Walnut Creek	26	grnd roof	0.03 0.17	36	grnd roof	0.05 0.21
Morgan Terrace Park				9	grnd	0.27
Livermore VA Hospital	20	grnd	0.17			
Del Valle Dam	23	toe crest	0.26 0.21			
G.E. Corporation, Vallecitos	23	grnd	0.11			

Soils

There are two main considerations in a discussion of soil conditions: agricultural fertility and engineering properties. (Details of soil investigations are contained in the Technical Report.)

a. Characteristics of Site Soils

The proposed Las Positas development site has been mapped by the U.S. Department of Agriculture, Soil Conservation Service, and twelve agricultural soil types have been identified within the study area. These include: Altamont Clay, Clear Lake Clay, Diablo Clay, Gaviota Rocky Sand Loam, Linne Clay Loam, Pescadero Clay, Pleasanton Gravelly Loam, Positas Gravelly Loam, Rincon Clay Loam, San Ysidro Loam, Solano Fine Sandy Loam, and Zamora Silty Loam. A summary of the Soil Conservation Service description of the properties of these agricultural soil types is presented on Table 4.10, Summary of Agricultural Soil Properties. The distributions of the agricultural soil types are indicated on Figure 4.6, Agricultural Soil Types.

b. Engineering Characteristics of Site Soils

The site is blanketed by silty or sandy clays which are predominantly highly expansive. The comparative degree of expansiveness of surface soils has been delineated by using the distributions of both agricultural soil types and geologic formations, supplemented by laboratory testing. Results are indicated on Figure 4.8, Expansiveness of Surface Soils.

Eight exploratory borings encountered from 5 feet to more than 20 feet of very stiff silty or sandy clays of medium-to-high plasticity. In randomly located borings, these clays were underlain by very dense to dense clayey sand layers which varied to more than 13 feet in thickness. Two borings encountered an approximately 2-foot-thick, very dense, silty gravel layer; and two borings encountered very stiff clayey silt layers.

Considering the nature of the deposition of alluvial soils on the site, it is expected that they are predominantly fine-grained, and contain random layers and lenses of sands and gravels. It is expected that the Terrace Deposits (Qt) contain numerous gravel and sand layers and the Alluvium (Qal) contains random sand layers.

The surficial soils have moderate-to-very low permeabilities. Variations in surficial permeability, based primarily on Soil Conservation Service Data, are indicated on Figure 4.9, Permeability of Surface Soils.

Impacts

On the basis of available geology and soils data, construction of the proposed Las Positas development would result in several potential geotechnical impacts. The actual extent of the impacts will be a function of how well the suggested mitigation measures are implemented.

Table 4.10
Summary of Agricultural Soil Properties

Symbol	Agricultural Soil Name	Generalized Description and Soil Profile	Unified Soil Classification	Percent Passing #200 Sieve	Reaction (pH)	Shrink-Swell Potential	Permeability (Inches/Hour)	*Hydrologic Soil Group	Topographic Characteristics	Comments
Aa, Am	Altamont	2 feet clay 2 feet calcareous silty clay Fine-grained sandstone & shale (Depth to bedrock varies from 1½ to 5 feet)	CH	90 - 95	6.5 - 8.5	High	0.05 - 0.2	D	Rolling to steep uplands; rock outcrops are common	Erosion problems on steep slopes
Cd	Clear Lake	3 feet clay 1 foot calcareous clay 1+ foot calcareous silty clay with gypsum seams	CH	70 - 80	6.5 - 8.2	High	0.05 - 0.2	D	Nearly level to gently sloping basins	
Db, Dm, Dv	Diablo	2½ feet silty clay 2 feet calcareous silty clay loam Fine-grained sandstone & shale (Depth to bedrock varies from 1½ to 5 feet)	CH or CL	90 - 100	6.1 - 8.2	High to Moderate	0.05 - 0.8	D	Gently rolling to steep uplands	Erosion problems on steep slopes; subject to local landslides
Ga	Gaviota	1 foot rocky sandy loam Hard sandstone (Depth to bedrock varies from 1½ to 2 feet)	SM	15 - 25	6.0 - 6.5	Low	2.5 - 5.0	B	Strongly sloping to very steep uplands	Erosion problem on steep slopes
La	Linne	3 feet calcareous clay loam Calcareous sandstone (Depth to bedrock varies from 1 to 4 feet)	CL	85 - 90	7.9 - 8.2	Low	0.2 - 0.8	C	Gently sloping to very steep uplands	Erosion problem on steep slopes; steeper slopes may be unstable
Pd	Pescadero	2½ feet clay 3½ feet calcareous clay loam	CH or CL	70 - 95	7.9 - 8.2	High to Moderate	0.05 - 0.5	D	Nearly level basin rims	Subject to high water table and ponding. Soil high in montmorillonite clay.
Pg	Pleasanton	2 feet gravelly loam 3 feet gravelly clay loam 1+ foot gravelly silt loam	SC	25 - 30	6.1 - 7.4	Low to Moderate	0.8 - 2.5	B	Nearly level to moderately sloping fans and terraces	
Po	Positas	1 foot gravelly loam 1½ feet clay 2 feet heavy loam Gravelly sandy clay loam	ML - CL or CH or CM	70 - 80	5.5 - 6.0	Low	0.8 - 2.5	D	Nearly level to steep uplands	Coarse gravel and cobbles throughout the soil profile.
Rd	Rincon	1 foot clay loam 3 feet clay Clay loam	ML - CL or CH	70 - 90	7.0 - 7.5	High	0.05 - 0.2	C	Nearly level to gently sloping broad alluvial fans	Finer-textured soils may contain some montmorillonite clay.
Sa	San Ysidro	1 foot clay loam or silt loam 2 feet clay 3 feet silty clay	ML - CL or CH	70 - 90	5.5 - 8.2	Low to High	0.05 - 2.5	D	Nearly level to undulating valley floors and old fans	
Sf	Solano	½ foot fine sandy loam 5+ feet clay loam	ML - CL or SC	40 - 90	5.6 - 9.0 (Saline-alkali)	Low to Moderate	0.05 - 2.5	C	Nearly level to gently sloping basin rims and stream terraces	Slight erosion hazard; some areas of hog-wallowed microrelief.
Za	Zamora	1½ feet silty clay loam 2½ feet heavy clay loam Clay loam	CL	80 - 90	7.4 - 7.8	Moderate	0.2 - 0.8	A	Nearly level to gently sloping alluvial fans; flood plains	

*NOTE:

The four generalized hydrologic groups (A, B, C and D) are based on estimates of water intake during the latter part of a storm of long duration.

GROUP A

Primary deep, well-drained sandy and gravelly soils with a rapid rate of water transmission

GROUP B

These moderately deep soils are well-drained and have a moderate rate of water transmission.

GROUP C

Soils in this group have a below-average infiltration rate when thoroughly wet. Most of the soils contain a layer that impedes the downward movement of water. They have a slow rate of water transmission.

GROUP D

The soils in this group are primarily clays with a high shrink-swell potential. Some of the soils in this group have a very shallow depth and a restrictive layer that impedes the downward movement of water. The soils in this group have a very slow rate of water transmission.

Source: Cooper-Clark & Associates
U.S. Soils Conservation Service

Slope Stability

Downslope movement of soil and/or rock results when the weight of the material on the slope overcomes the forces resisting such movement. This can occur when 1) additional weight is applied as in placing a fill on a slope, 2) support is removed from the toe of the slope as when grading cuts away the base of the hillside, or 3) strength of subsurface materials is reduced as when water is added to clays.

Because past landslide occurrence is related to certain combinations of inclination of the slope, slope aspects, erosion, geologic unit, strike and dip of bedding plans, etc., it is possible to map categories of stability. Cooper & Clark prepared Figure 4.10 by enlarging and modifying Helley and Lajoie's (1979) Slope Stability Map.

The contacts between stability categories were adjusted using all available geologic mapping and detailed topography to be more consistent with boundaries of all the mapped landslides, alluvial contacts and slopes. Of course, future stability depends upon a number of other interrelated factors including rainfall, vegetation, occurrence and intensity of earthquake shaking and development procedures such as grading and drainage control.

The proposed Las Positas development would involve some limited development of hillside areas. Only one large landslide has been identified within the limits of the proposed project area and only the northwestern margins of the area are adjacent to other unstable slopes. The slopes in the southern portion of the project area are generally stable. The flanks of the ridge in the northern portion of the area (Section 21) are moderately unstable. These slopes are shown for detached single-family residential development.

Impacts associated with slope stability are not expected to be significant for most areas of the proposed Las Positas development. However, detailed consideration should be given to this subject when grading plans are developed.

Surface Rupture/Ground Failures

The complex network of active, potentially active and suspected faults (air-photo lineaments) which traverse the project area suggests the possiblity of future on-site surface rupture.

Structural distress and damage will result if buildings straddle an active fault where significant amounts of surface rupture movement take place. However, the potential for horizontal or vertical displacements of the ground surface along active faults within the project area is not believed to be significant.

Although surface rupture did occur along the Greenville Fault in January of 1980, the surface trace is located several thousand feet east of the proposed Las Positas development area. The movement on individual cracks was no more than several inches and commonly less than an inch. The potential for larger displacements is believed to be no greater than a foot or so. However, the main trace of the Greenville Fault does not pass through the project area.

Other suspected traces (air-photo lineaments) which have been mapped through the project area are not as well marked by geomorphic features indicative of recent movements. This suggests that the movements on the suspected faults are less frequent or have ceased altogether. The lesser geomorphic expression of these features (compared to the Greenville Fault) suggests that, if they are active faults, the amount of surface rupture which will occur along them will be less than that which occurs along the Greenville Fault.

Strong Ground Shaking

Based upon historic records and on the known general seismicity of the San Francisco Bay Region, it is considered probable that during the next 150 years the site will be shaken by at least one earthquake of Richter Magnitude 6.0 or greater, originating on one of the faults in the region (i.e. epicenter within 100 miles) and by numerous earthquakes of lesser magnitude, having epicentral locations within 20 miles of the project site. It is estimated that an earthquake with Richter Magnitude of 7.5, originating on the Calaveras Fault is the maximum probable earthquake (MPE) that could affect the area. The recurrence interval for an earthquake of this magnitude should be in the range of 50 to 100 years.

From the method used by Schabel & Seed (1972), Ploessel & Slossen (1974), and Cooper & Clark (1974), the site could experience a short-term, peak ground acceleration of up to 0.73 g and a repeatable high ground acceleration of 0.48 g during the MPE centered on the nearby Calaveras Fault. The smaller MPE on the nearer Greenville Fault would produce lesser accelerations. Ground surface acceleration immediately adjacent to active faults could exceed 1.0 g (peak) and 0.65 g (repeatable high) in the event of surface rupture on the adjacent trace.

Ground Failures

In general, the combination of medium-to-high density soils, a significant thickness of clay overburden, and minor amounts of saturated granulated soils makes the potential for ground failure due to liquefaction rather low in most of the project area. On the basis of available subsurface data, it has been estimated that the compaction of localized granular (sands and gravels) deposits due to ground shaking could result in some differential settlements.

Landslides induced by strong ground shaking may occur locally on the steeper slopes peripheral to the site. The most likely location of such failures are known landslide areas.

Soils

The most significant engineering consideration of the site soils is their expansive nature. Because of their significant shrinkage with moisture loss there are potential problems associated with building structures on such soils.

Mitigation Measures

The following paragraphs present initial suggestions for mitigating the identified impacts described above.

Slope Stability

Previous published and unpublished studies indicate the absence of natural landslides within the project area (one exception) and relatively low erosion potential in the soils and bedrock underlying hill portions of most of the project area.

These geotechnical conditions are favorable for good slope stability within the project area provided that conventional design and construction practices are followed. Cut slopes should be inspected by a qualified engineering geologist to determine of unfavorable bedding or fracture plane attitudes are exposed. All permanent cut and fill slopes should be vegetated following construction and areas of potential instability regraded or buttressed.

The proposed land use diagram currently indicates some amounts of development (primarily residential) in areas initially determined to be moderately unstable, areas of greater than 15% slope that are underlain by bedrock units susceptible to landsliding, but not underlain by landslide deposits. Additional detailed soils and geologic studies should be required within all hilly portions of the project area. Development within these areas should be in compliance with recommendations generated by the soil and geologic investigations. Some further adjustment to the land use diagram may be required to redesignate these areas for open space and/or very low intensity residential uses.

Fault Studies and Setbacks

Currently available information is not sufficient to delineate the traces of all active faults within the project area precisely enough to either position structures or to establish necessary setback distances. Additional specific investigations will be needed to determine the potential for surface rupture along any of the faults previously mapped and/or suspected across the proposed development area. Such studies will probably involve extensive subsurface exploration and analysis of displacement history. The results of such investigations would provide the necessarily detailed basis for determining appropriate setback distances for different types of structures.

Some adjustment to the proposed land uses may be required following the precise mapping of fault set-back zones. Where appropriate, portions of the fault zones could be incorporated into the proposed park and open space system and publicly developed and maintained.

The potential for surface rupture along traces of the northern "Tesla," northern "Carnegie," and other suspected faults would need to be considered in final planning and design of major transportation, communication, energy, and water distribution facilities which cross them. Where utilities traverse faults with a small displacement potential, flexible sections capable of safely withstanding the anticipated offsets could be provided. For larger displacement faults, buried utilities could be provided with automatic shut-off valves in addition to line flexibility. For critical lines, such as trunk gas and water lines, it may be necessary to place the lines above ground, as well as provide flexibility and automatic shut-off capability. The type of mitigation actually required will depend not only on the results of fault studies, but also on an assessment of the allowable risk for each line based on the facilities served, size of the service unit, the availability of emergency back-up service, and other factors.

Ground Shaking

Strong ground shaking is a general problem for all construction in California. The Uniform Building Code (UBC) is periodically upgraded based on lessons learned from major earthquakes and from research into the response of buildings to strong shaking. Use and enforcement of present UBC provisions should provide protection against the risk of collapse of residential or commercial structures but would not guarantee that some damage to structures and contents will not be experienced during a major earthquake. Property owners and residents could reduce risk further by taking certain precautions in bracing bookcases, water heaters and other heavy objects. Earthquake insurance would provide some mitigation of financial losses resulting from strong groundshaking.

Geotechnical studies by Cooper & Clark indicate that conditions conducive to soil liquefaction and related phenomena are not generally present at the project site. Site-specific soils investigations should identify local areas which have such potential and recommend appropriate mitigating design. Conservative grading practice would minimize the potential for seismically induced landsliding in cut or fill slopes. However, minor slumping should be expected if a major earthquake occurs during the rainy season.

Expansive Soils

Geotechnical studies by Cooper & Clark (1973) have identified areas of expansive soils. The problem can be mitigated by lime treatment or by pier and grade beam or deeper than normal foundations. Site-specific soil engineering investigations would be required by the Alameda County Building Code before building permits are issued for structures within the proposed project. Such studies would address expansion potential and recommend suitable foundation designs for specific structures.



GEOLOGIC MAP

FIGURE 4.4

EXPLANATION

Qa	ALLUVIUM
Qt	TERRACE DEPOSITS
QTl	LIVERMORE GRAVELS
QTt	TASSAJARA FORMATION
Tps	ORINDA FORMATION
Tmss	CIERBO SANDSTONE
Tmcs	CIERBO CLAYSTONE
Tn	NEROLY FORMATION
Kps	PANOCHE FORMATION SANDSTONE
Kp	PANOCHE FORMATION CLAYSTONE

SOURCE:
primarily Dibblee (1980) with selected additions from DWR (1974), Herd (1977), Wagner (1979), Wright (1981) and Cooper & Clark (1982)

CONTACT

SOLID WHERE OBSERVED
DASHED WHERE APPROXIMATELY LOCATED
BOUNDARY OF ALLUVIUM

FAULT

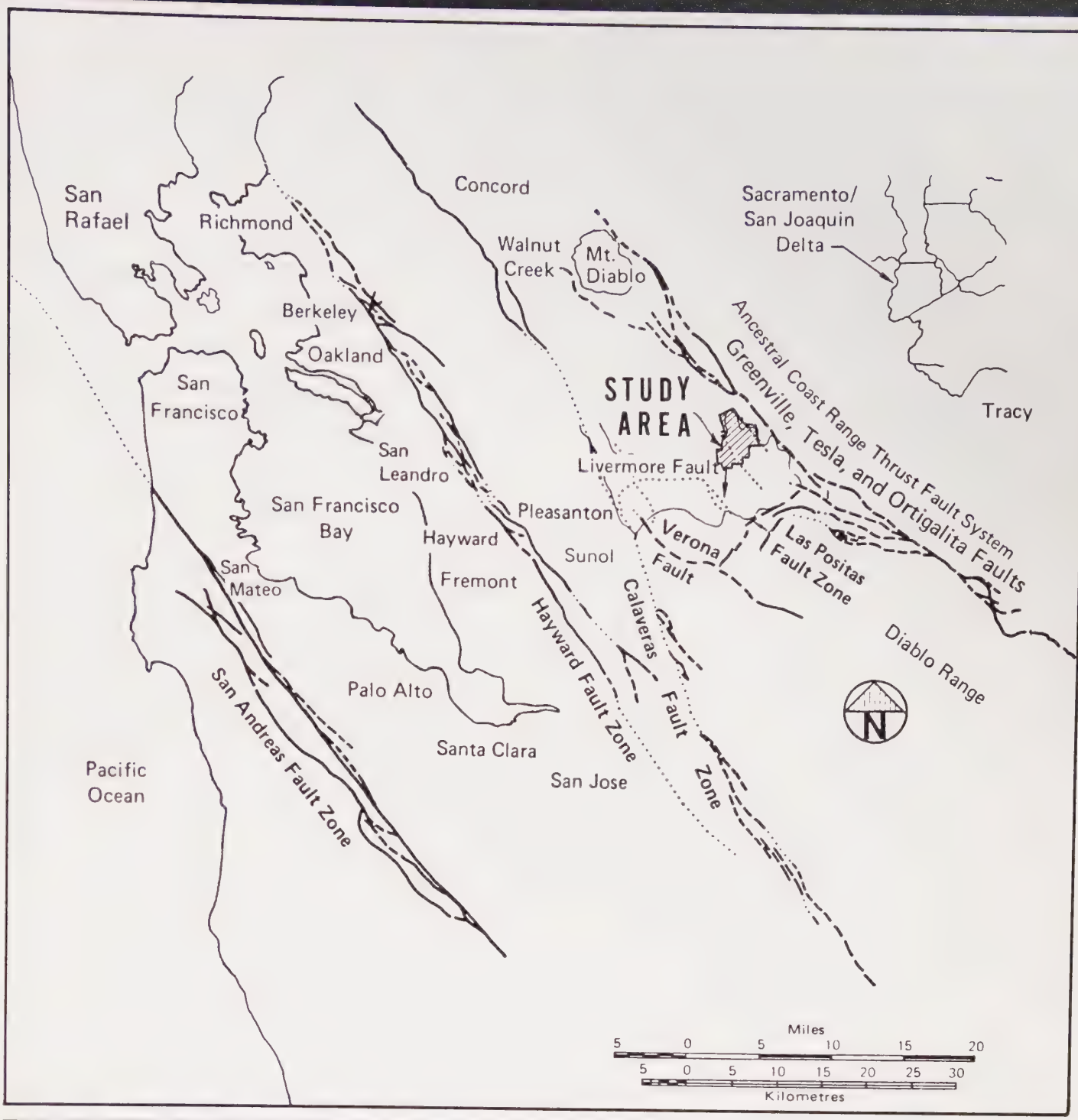
DASHED WHERE INFERRED
DOTTED WHERE CONCEALED
? QUERIED WHERE UNCERTAIN

AIR-PHOTO LINEAMENT

AXIS OF ANTICLINAL FOLD

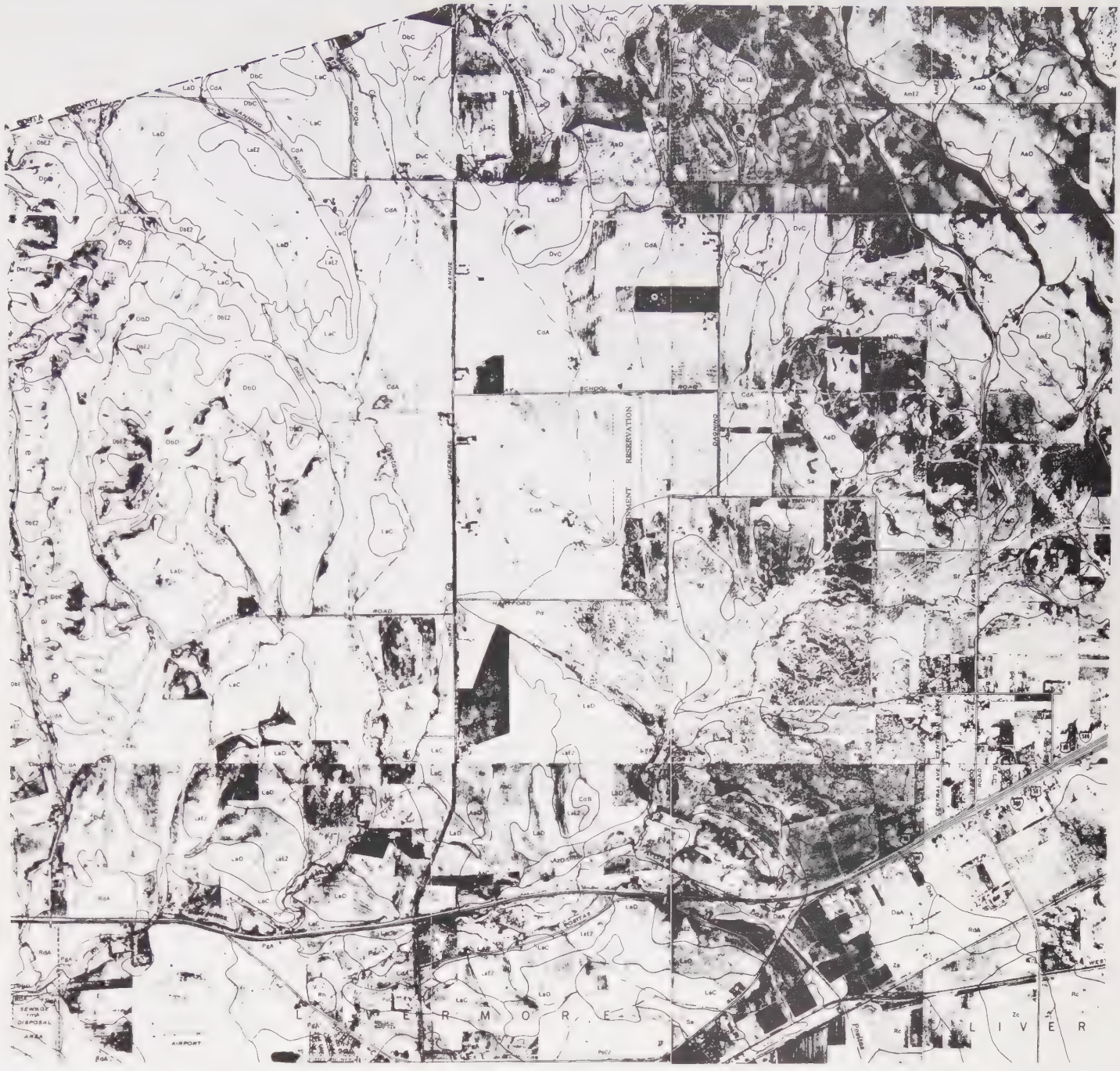
AXIS OF SYNCLINAL FOLD

STRIKE AND DIP OF BEDDING PLANES



MAJOR FAULT ZONES

FIGURE 4.5



SOIL TYPES

FIGURE 4.6

4000′



EXPANSIVENESS OF SURFACE SOILS

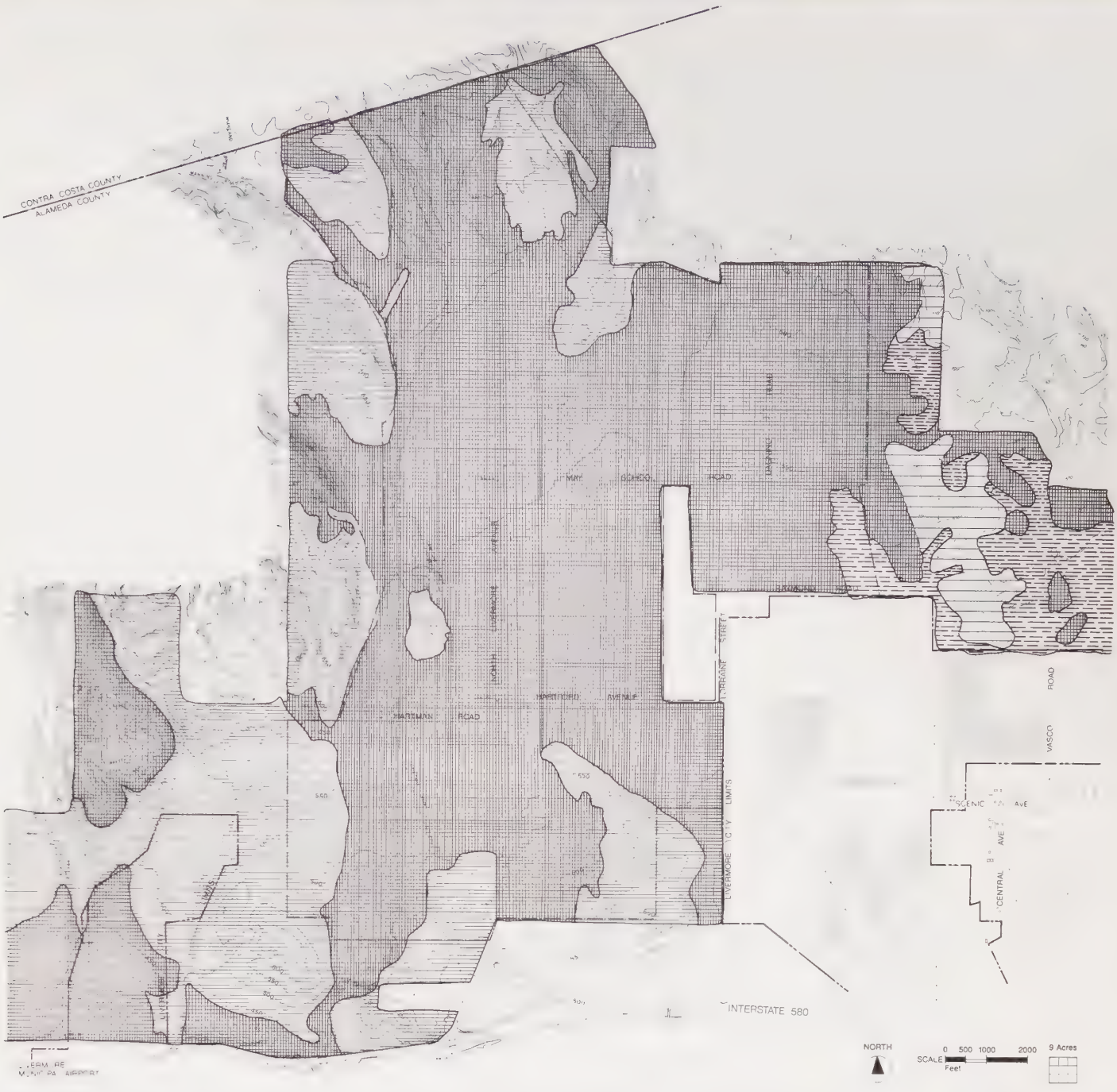
FIGURE 4.8

MODERATE TO LOW EXPANSION

HIGH EXPANSION

VERY HIGH EXPANSION

SOURCE: COOPER AND CLARK



PERMEABILITY OF SURFACE SOILS

FIGURE 4.9

MODERATE (2.5-5.0 INCHES/HOUR)

MODERATE LOW (0.5-2.5 INCHES/HOUR)

LOW (0.2-0.8 INCHES/HOUR)

VERY LOW (0.05-0.80 INCHES/HOUR)

SOURCE: COOPER AND CLARK
U.S. SOILS CONSERVATION SERVICE



SLOPE STABILITY

FIGURE 4.10

CATEGORY 1—STABLE
AREAS OF 0-5% SLOPE THAT ARE NOT UNDERLAIN BY LANDSLIDE DEPOSITS.

CATEGORY 1A—UNSTABLE
AREAS OF 0-5% SLOPE THAT INCLUDE TIDELANDS, MARSHLANDS, AND SWAMPLANDS THAT ARE UNDERLAIN BY MOIST, UNCONSOLIDATED MUDS.

CATEGORY 2—GENERALLY STABLE
AREAS OF 5-15% SLOPE THAT ARE NOT UNDERLAIN BY LANDSLIDE DEPOSITS.

CATEGORY 3—GENERALLY STABLE TO MARGINALLY STABLE
AREAS OF GREATER THAN 15% SLOPE THAT ARE NOT UNDERLAIN BY LANDSLIDE DEPOSITS OR BEDROCK UNITS SUSCEPTIBLE TO LANDSLIDING.

CATEGORY 4—MODERATLY UNSTABLE
AREAS OF GREATER THAN 15% SLOPE THAT ARE UNDERLAIN BY BEDROCK UNITS SUSCEPTIBLE TO LANDSLIDING BUT NOT UNDERLAIN BY LANDSLIDE DEPOSITS.

CATEGORY 5—UNSTABLE
AREAS THAT ARE UNDERLAIN BY, OR ARE IMMEDIATLY ADJACENT TO LANDSLIDE DEPOSITS.

SOURCE: COOPER AND CLARK

4.4 HYDROLOGIC CONDITIONS

Setting

The Alameda Creek Drainage Basin

The Livermore-Amador Valley lies within the Alameda Creek Drainage Basin. This basin is bounded on the east by hills and ridges of the Diablo portion of the California coastal range which separate this watershed from the San Joaquin Valley. To the north, the basin is bounded by the Black Hills of the Diablo Range and, at the southern end, by drainages of the Coyote River and other tributaries to the South San Francisco Bay.

The watershed is approximately 20 miles wide and 40 miles long. It encompasses an area of 430,000 acres of which 236,000 acres are in Alameda County, 42,000 acres in Contra Costa County, and the remaining 152,000 acres in Santa Clara County. Excluding the valley areas, the topography of the basin is quite rugged and is composed largely of steep ridges and narrow canyons. Elevations range from 3,000 feet or more in the southern portions of the basin down to 220 feet at the basin's western boundary.

Alameda Creek originates near Mount Hamilton in Santa Clara County and eventually empties into San Francisco Bay near Union City. The creek flows in a northwesterly direction for about 20 miles, intercepting runoff from Calaveras and San Antonio Creeks before reaching the Sunol Valley. At its confluence with Arroyo de la Laguna near Sunol, Alameda Creek swings west and flows through Niles Canyon onto the alluvial plain overlying the Niles Cone, before discharging into the Bay.

Until the development of the Calaveras and San Antonio Reservoirs and Lake Del Valle, there was wide variation in flows in Alameda Creek. Periods of high rainfall which produced flooding were followed by months when the channel carried little or no flow. By controlling releases from these facilities, extremes in flow and associated problems of flooding and desiccation of stream beds have been reduced. Although Alameda Creek now flows throughout the year, many smaller streams in the watershed have no flow in the dry season. Limited amounts of local surface water runoff are used in the basin except for water collected in the three reservoirs. Runoff collected in the Del Valle Reservoir is used, when available, to recharge the groundwater basin.

The ground water basin in the Livermore-Amador Valley is generally described as a multilayered aquifer system, with an unconfined aquifer overlying a sequence of partially confined aquifers. Several faults also separate the basin into a number of subbasins, thus affecting ground water movement. Estimated ground water storage capacity in the basin totals about 1,600,000 acre feet. Part of this capacity is contained in low water-yielding deposits and is not readily extractable. Another part has poor quality water. About 400,000 acre feet of storage capacity remains with sufficient water-yielding capability and quality to serve as a major water source; almost all of this is in the central basin located generally south of I-580 freeway.

Areas north of this central basin, generally north of I-580, and including the Las Positas area, generally have poor water quality with high TDS and chlorides, a low specific yield, little storage, and in some areas high ground water levels. [1]

Drainage in the Las Positas Area

The Livermore-Amador Valley is drained by Arroyo Del Valle, Arroyo Mocho, the Alamo Canal, and Arroyo Las Positas. Arroyo Las Positas is the primary drainage course for the eastern portions of the Valley. It flows east-west near Interstate 580 to its confluence with the Alamo Canal and eventually drains into Arroyo de la Laguna.

Figure 4.11, Surface Drainage, indicates estimates of flows in Arroyo Las Positas and its tributaries under projected future development conditions. In developing these estimates, Alameda County Flood Control and Water Conservation District Zone 7 assumed low density development in Las Positas Valley and open space to the north and west of it. The discharges indicated represent 15-year flows for normal drainage and 100-year flows for major drainage. based on information currently available. Cayetano Creek is the primary drainage course in Las Positas Valley and will have a maximum flow of about 1,300 cfs at confluence with Arroyo Las Positas. Downstream of this confluence, the maximum Arroyo Las Positas flow will be about 8,750 cfs.

Zone 7 indicates that there are no defined flood plains within Las Positas Valley. However, under full development conditions, the Zone projects flooding in Cayetano Creek which would require flood control measures to be implemented.

Groundwater, Aquifer, and Permeability Conditions - Las Positas Area

a. General

Groundwater in the the Las Positas project area is present in both the unconsolidated alluvium and the Tassajara formation. The chemical quality of the water varies across the area.

b. Aquifers

The Las Positas Valley is blanketed by a relatively thin accumulation of alluvium consisting of silts, clays, and limited sands and gravel. This unconsolidated material ranges in thickness from a few feet around the valley edge to about 100 feet in the central portion of the site. Within most of the site, the alluvium appears to average some 50 to 60 feet in thickness. Although pervious layers and lenses within the alluvium are limited, the alluvium contains a water table and yields small quantities of water with variable chemical quality to wells in much of the area. (Geologic Studies Technical report detailed groundwater data.)

[1] Draft Wastewater Management Plan for the Unsewered, Unincorporated Area of Alameda Creek Watershed Above Nile, March 3, 1982.

The Orinda formation underlies the valley alluvium in all but the extreme eastern and northeastern parts of the study area. This formation ranges to hundreds of feet in thickness and outcrops in the hill slopes north, west and southwest of the central valley portion of the site. Although the Orinda formation generally consists of consolidated materials, it includes some friable sandstone and silty sand which yield small amounts of water to wells. Water, so contained, is confined and has essentially no continuity with the overlying alluvium.

Non-waterbearing older rock formations underlie the eastern extremity of the study area and outcrop in these slopes.

The Livermore Gravel formation, the major groundwater aquifer of the Livermore Valley, does not extend into the study area. This formation abuts portions of Interstate 580, south of the site.

c. Distribution and Flow

Prominent faults, namely the northern "Carnegie" and northern "Tesla" Faults, traverse the Las Positas site and other suspected faults may traverse the valley as indicated in Figure 4.4, Geologic Map. To the northeast, the "Carnegie" Fault does not appear to interrupt subsurface water movement; whereas, to the southeast, it definitely impedes groundwater flow. Within the Las Positas area, the northern "Tesla" Fault has offset the stratigraphic sequence of alluvium and Orinda bedding to the extent that there is no apparent groundwater continuity across it. In the valley alluvium aquifers, the suspected faults apparently do not form groundwater flow barriers.

In the alluvium, the groundwater table is very shallow in the southwestern, northeastern, and south-central portions of the site. Elsewhere, it ranges to more than 30 feet below the ground surface. Interpretation and extrapolation of limited available well data indicate the variations in depth to groundwater level as shown on Figure 4.12. Depth to water levels are deeper to the north toward the higher ground surface elevations and, due to increased usage, the water depth increases to the south, within the City of Livermore.

The water level within the Orinda formation is similar to the water level in the alluvium. Where possible, most wells have penetrated both units for maximum production and the level observed in such cases is, therefore, a combination of the two. Where the Orinda formation is exposed to hill slopes, the water level in wells could be expected to range from 20 to 50 feet; it is unconfined where the aquifer beds crop out. In most instances, the groundwater moves in the direction of the local ground surface slope. However, the groundwater surface in the areas where the Orinda Formation is exposed generally has a somewhat steeper gradient toward the south than does the unconfined water table nearby. In contrast, groundwater gradients are flatter where the water levels are very shallow. Subsurface groundwater movement is very slow and quantitatively small because of the sparse and "tight" (low permeability) aquifer materials.

The best on-site wells penetrate the maximum (approximately 100 feet) thickness of alluvium and 100 feet or more of the Orinda Formation. Such wells have a sustainable yield capability of about 60 to 80 gallons per minute (gpm). However, in most of the area the alluvium is thinner and therefore less productive. The Orinda Formation varies laterally and vertically a great deal in its productive capacity, but is generally similar to the alluvium. Thus, wells yield from about 20 to 80 gpm and probably average on the order of 40 to 50 gpm. Therefore, supplies are quantitatively suitable for domestic and stock purposes and perhaps for very small irrigation operations.

d. Quality

Excessive amounts of chloride, boron, and fluoride are found in groundwater locally within the study area, mainly in the eastern part of the Las Positas site, but also to some extent in smaller areas in the west and southern fringe of the site. See Figure 4.12. In the eastern low-quality area, the water is so mineralized as to be both non-potable and unacceptable for irrigation. The other poor quality water areas provide marginal or unusable water by most standards. Elsewhere, groundwater is somewhat hard but indications show it to be acceptable for most uses.

The main replenishment of site groundwater is derived from infiltration of Altamont Creek which flows from the hills east of the project area. This is also the source of most of the local excessive mineralization discussed above. Despite the presence of low permeability surface soils, some rainfall does penetrate the surface soils during wetter years and adds to the groundwater supply. Similarly, seepage from smaller streams supplements the major replenishment sources. The meager quantities of surface water available to the area, plus the limited subsurface storage capacity, produce a very low rate of average annual groundwater recharge.

Impacts

Groundwater, Aquifer, and Permeability Impact

On-site Impacts

Groundwater Levels - Impacts

The wastewater management proposal for the Las Positas development calls for land application of approximately 5,100 acre feet of treated (partially demineralized/blended) wastewater annually as irrigation for approximately 1,420 acres of landscaped areas. During seasons with average rainfall, the proposed total disposal area would be sufficient to accomodate the volume of wastewater generated. When extreme conditions (such as an exceptionally long, wetter-than-average winter followed by a cool spring and summer) occur, there might be more wastewater generated than the proposed disposal areas could accommodate. In response to this, a contingency plan for additional disposal is proposed. An area of approximately 135 acres, outside the project urban area and in the northwest part of the Las Positas Valley, is identified as a contingency disposal area (see figure 2.6). The area is controlled by the project sponsor.

The potential impact of irrigation disposal on depth to the water table is a principal groundwater consideration. The several inches of treated effluent

which may percolate down to the water table would probably make little or no difference in much of the area where the water table is deeper than 10 feet and has a relatively steep gradient. On the other hand, where the water table is very shallow (only a few feet below the ground surface, see Figure 4.12) additional recharge from applied irrigation water could raise the water table to levels which would create problems for surface development. Available historical water level records for local wells in the southern portion of the project area indicate a general rising trend for a number of years in some wells. This may be due to either long-term cyclic behavior or to existing scattered irrigation. Some of this shallow groundwater area presently has drainage problems to some degree; based on information currently available, additional irrigation-induced recharge would intensify and possibly create new problems.

Potential impacts are possible on site grading, particularly excavations; utility trenching; basement construction; and landscaping. The areas with high groundwater are relatively flat, and excessive grading is not anticipated. Typical residental construction without basements would not be affected. Special construction techniques would be needed for significant commercial and employment structures and utility trenches. Measures to dewater trenches and excavations would have to be employed, special foundations, and permanent underdrain systems would be required if a specific case warrants. Special joints and sealants would be required for underground utilities subject to groundwater inundation. The development proposal includes a comprehensive storm drainage system, so the groundwater levels would not be significantly affected by construction and increased stormwater runoff caused by development. These cited techniques are standard engineering practices.

Groundwater Quality - Impacts

Brine Exploration Ponds

In areas of relatively good quality groundwater (the western half of the project area, See Figure 4.12), alluvial aquifers lie close to the ground surface and are subject to seepage of polluting liquids. Even though local soils are relatively impermeable, locating brine evaporation ponds (See Section 2.0 - Project Description, and Section 5.7 - Wastewater Treatment and Disposal) on the alluvium could cause a slow downward movement which could degrade the water quality. This potential problem is anticipated, and the brine ponds would be fully lined to prevent seepage losses. A monitoring system would be installed beneath and adjacent to the ponds which would allow periodic well sampling. Chemical analysis of the water samples would provide an indication of leaks and be a basis for pond maintenance and repair.

As the Orinda formation is confined and not in continuity with overlying alluvium, good water quality in the formation would not be endangered under the circumstances described. Where these confined aquifers occasionally crop out in the surrounding hill slope areas, surface water recharge enters and moves downdip to points where wells can intercept and remove it. As only the untreated water would be held in lined brine ponds, the possibility of contaminating groundwater in this formation is eliminated. All other treated water, either held in storage ponds, or applied to open space areas, would meet the 250 mg/l criteria established by Zone 7 and in itself should not cause direct groundwater degradation.

Effluent Irrigation

The potential chemical impacts of treated effluent irrigation disposal on local groundwater quality are difficult to assess in detail and would vary substantially across the area with the marked differences in groundwater quality. From strictly a mineral content standpoint, percolation of "demineralized/blended" effluent in the northeastern part of the area would have a beneficial effect due to the exceedingly poor existing groundwater quality (ambient TDS range from 950 to over 2800 mg/l). Generally elsewhere, there may be little difference between the quality of effluent and that of local groundwater. In such areas, some quality enhancement of the effluent may be achieved by percolation through the soil on its way to the water table.

Off-Site Groundwater Aquifer Permeability Impacts

The potential chemical impacts which might occur beyond the local groundwater basin are of greater concern than potential on-site impacts. This is because the existing groundwater quality within the Las Positas basin is known to be poor, with TDS exceeding allowable standards for surface discharge. Currently, there is probably some natural discharge of high TDS (300 to 900 mg/l) groundwater into Arroyo Las Positas through the gaps where Cayetano and Altamont Creeks cut through the hills immediately north of Interstate 580. Surface application of treated effluent (which itself would have acceptable quality), could cause an increase in the rate of lateral subsurface migration and/or seepage into surface drainageways of the ambient, poor quality groundwater. The associated impacts could include chemical degradation of high quality groundwater resources located down stream of the project area (i.e. in the Central Livermore Basin generally south of I-580).

In order to evaluate the range of possible chemical impacts on the Central Basin, the "Salt Balance" model used by CH2M Hill[1] to calculate groundwater impacts on low density development on septic tanks has been used. The same geohydrologic factors and salt routing assumptions used by CH2M Hill have been used for this analysis. Specifically, it is assumed that the portion of the Las Positas "fringe" Subbasin which would be recharged by deep percolation of some of the treated effluent contains 36,000 acre-feet (A-F) of poor quality water (600 mg/l TDS). Although there would probably be some amount of mixing of this recharge water with existing groundwater, the presence of tighter interbeds would tend to minimize this and it is assumed that the new water essentially stays on top, except for a thin mixing interface. Also assumed is that outflow from the Las Positas Subbasin would escape as surface flow into Arroyo Las Positas (via Cayetano and Altamont Creeks). Zone 7 data indicates that 26% of such flow would percolate into the Airport Subbasin (assumed to contain 85,000 A-F of mixing water) of the Central Basin.

[1] Chapter 4 and 7 of the Camp Dresser & McKee Technical Supplement Report, Wastewater Management Plan for the Unsewered, Unincorporated Area of Alameda Creek Watershed Above Niles, 1982.

The remaining 74% of Las Positas groundwater discharge which is not percolated into the Airport Subbbasin would continue to flow downstream until it is absorbed into groundwater, or is discharged to San Francisco Bay. Part, or all of it, could percolate into the Central Basin, or into the Niles Cone area, depending on conditions at any particular time. Percolation and water quality concentration are contingent on the amount and sequence of tributary inflow, the position of the water table, stream channel percolation rates, and other factors. Dilution would be very important during winter and spring seasons. Determination of what happens to any part of potential Las Positas discharge downstream would be very speculative, even with further study. Effects of such discharge could be detected and assessed based on a monitoring program implemented by or in conjuntion with local authorities.

For purposes of establishing an upper limit of potential impacts to the Airport Subbasin, the salt load calculation using the following assumptions was made to determine how the development would load the groundwater system with salts:

- The 5.0 MGD plant would produce 5,100 A-F/year of 250 mg/liter TDS (1,734 tons/year) blended wastewater effluent to be disposed by irrigation on 1,420 acres.

- Only 10% of the applied water percolates deep enough to recharge the local groundwater. A ten-fold increase in the concentration of TDS occurs.

- No mixing of infiltrate and wastewater with local groundwater occurs (i.e. direct outflow).

- The previously calculated mixing volume of groundwater in the Airport Subbasin receives an even distribution of new recharge waters and blends uniformly with them.

Table 4.11 presents the calculated recharge and outflow salt load with the predicted impact on the receiving Airport Subbasin in terms of increase in TDS in milligrams per liter per year.

It is anticipated that plants would take up some of the salt. If the plant cuttings are exported, the impact on the Airport Subbasin should be reduced.

Direct outflow of 2500 mg/l TDS water was assumed. However, if displacement or "evacuation" of 510 A-F/Yr. of ambient water (600 mg/l TDS) is induced by land application, then impact in the Airport Subbasin would be only 0.94 mg/l/yr. Mixing of percolate and ambient groundwater should result in an average impact between 3.90 and 0.94 mg/l/yr. These calculations assume total mixing in the receiving Airport Subbasin; the smaller the mixing volume the higher will be the change in TDS. In actual fact, there may be considerable and increasing groundwater discharge from the Airport Subbasin which should be considered in a detailed assessment of salt buildup under a given set of inflow conditions.

The so-called "mixing volume" of groundwater storage is not likely to be evenly mixed with incoming recharge waters. A more reasonable assumption is that stream percolation affects groundwater quality near the stream disporportionately to that farther away. No geohydrologic information on the Airport Subbasin is available to determine where outflow and/or pumping could reduce or increase the effects.

TABLE 4.11
SALT BALANCE MODEL

Item	Amount
WASTEWATER APPLIED IN LAS POSITAS SUBBASIN	
Volume	5100 A-F/yr.
TDS Concentration	250 mg/l
PERCOLATION/OUTFLOW - LAS POSITAS SUBBASIN	
Volume	510 A-F/yr.
TDS Concentration	2500 mg/l
Salt Load	1735 tons/yr.
INFILTRATION into AIRPORT SUBBASIN	
Percentage of Flow	26%
Volume	133 mg/l
TDS Concentration	2500 mg/l
Salt Load	451 tons/yr.
IMPACT on AIRPORT SUBBASIN	
Increase in TDS	3.9 mg/l/yr.

Source: Cooper & Clark, 1982

Potential chemical degradation of the Central Basin (Airport Subbasin) should, on the average, range between 3.90 and 0.94 mg/l/year increase in TDS. Locally, the effect could be greater. Field studies are needed to verify actual groundwater system behavior and to provide a detailed basis for assessing potential groundwater impacts of wastewater application.

Drainage and Flooding Impacts

Alameda County Flood Control and Water Conservation District Zone 7 projections for flows in Arroyo Las Positas and its tributaries under projected future development conditions are indicated in Figure 4.11, Surface Drainage. The projected 15-year storm would result in a flow of about 1,300 cfs in Cayetano Creek near its confluence with Arroyo Las Positas based on currently available information. Under full development conditions, this discharge would cause flooding in Cayetano Creek unless control measures are provided.

Development on the Las Positas site would also cause some increase in the storm flows in off-site flood control facilities. Due to local topographic and hydrological conditions, the maximum flows from the planning area would not coincide with the peak flow in Arroyo Las Positas. Thus, the increase in the maximum discharge in Arroyo Las Positas resulting from development would be minor.

Mitigation Measures

Mitigation of Groundwater Aquifer and Permeability Impacts

Several options are here identified to mitigate the potential impacts caused by raising the groundwater level within the project area. First is an alternative wastewater disposal plan, involving direct recharge in the Central Basin itself (effluent taken to appropriate recharge area in closed pipeline - no deep percolation allowed within Las Positas area). Such a scheme would:

- Eliminate problem of salt buildup in local groundwater and its discharge downstream
- Reduce the need for a special wastewater distribution system.
- Probably be limited necessarily to only a portion of project wastewater effluent

These advantages must be weighed against the fact that "export" of the wastewater would require import of additional water for irrigation within the project. And even if irrigation of the proposed development was carried out with potable water, the water table would rise resulting in drainage and construction problems and in an increase in the rate of migration of the ambient, poor quality groundwater to the Central Basin. Also, the Department of Health Services and the Regional Water Quality Control Board may not allow such "direct recharge" of treated wastewater due to concerns regarding trace organics which might not be removed by treatment. This alternative is not recommended.

(Export of wastewater out of the Livermore-Amador Valley to the Bay through a pipeline roughly parallel to the LAVWMA pipeline is addressed as an alternative, rather than a mitigation measure. The export alternative is considered to be the most desirable alternative for wastewater management, in terms of overall simplicity. However, lack of sufficient capacity in the existing system, and uncertainties surrounding provision of a parallel export system have required that in-valley wastewater reclamation be considered. See Section 5.6 for further discussion.)

A second mitigation program, recommended by project consultants, includes collection and demineralization of groundwater in order to 1) minimize constraints of high groundwaters in the lower part of the project area; and 2) prevent unwanted downstream release of project drainage. Two options are identified due to uncertainty at this time regarding quality requirements for land application of reclaimed water. The first option assumes that both wastewater and collected groundwater must be mineralized; the second assumes all demineralization can be accomplished on groundwater.

Option 1 assumes that demineralization of wastewater to meet a quality criteria of 250 mg/l TDS would be required for land application. Assuming that 10 percent of the wastewater leaches all of the salts, percolate reaching the groundwater would be approximately 2,500 mg/l TDS. To prevent groundwater degradation resulting from sub-basin migration, Option 1 assumes that a groundwater collection and demineralization system would produce 250 mg/l TDS water for reuse or stream release. Thus, Option 1 requires demineralization for both wastewater treatment and groundwater treatment.

Option 2 assumes that with a groundwater collection system, wastewater demineralization would be unnecessary. Reclaimed wastewater would be treated to acceptable levels for landscape irrigation use. Applied reclaimed water could contain approximately 500 mg/l TDS. Again using a 10 percent leaching factor, precolate quality would similarly be 5,000 mg/l TDS. Collection and demineralization of groundwater would produce a quality of approximately 250 mg/l TDS for reuse or stream release.

Under either groundwater management option, both groundwaters and additional drainage waters from irrigation would be controlled by project facilities, so that land now unusable would be reclaimed and made useful, and such that unwanted downstream release of project drainage would be prevented. No groundwater discharge from project operations in Las Positas would be allowed to overflow to downstream areas and basins unless it is equivalent to, or better than the quality of downstream groundwaters. A possible exception to this would be if the appropriate authority, presumably Zone 7 and/or the RWQCB, authorizes the release of more mineralized waters. (It has not been determined whether or not the standards of comparison to be used should include trace organics and viruses.

Additional groundwater studies would be required prior to proceeding with the project. These studies would not be a mitigation procedure but rather an element of project design. Additional studies proposed would include the following:

- Canvas and obtain data on all existing wells in appropriate parts of the Las Positas Subbasin, particularly the lower parts. Include depth of water measurements, water sampling and analysis logs, etc.

- Delineate highwater table areas and those requiring drainage at present.

- Delineate groundwater qualtiy variations in more detail, both in appropriate parts of Las Positas and the downstream Airport Subbasin.

- Formulate groundwater monitoring program to detect changes in water quality and depth, including downstream as necessary.

- Refine irrigation procedures analysis to determine soil leaching requirements, irrigation efficiencies, and probable quantities and quality of percolation to groundwater.

- Quantify present rate of groundwater inflow to lower areas which will have to be drained to reclaim area.

- Assess drainability of soils and essential drainage system requirements for project conditions.

- Refine salt load model analysis for Las Positas groundwater drainage discharge under project conditions. Consider downstream potential effects (detailed analysis is not presently considered appropriate).

- Construct maps and other forms to show interpretations of data conditions.

Mitigation of Drainage and Flooding Impacts

Several major drainage ways through or adjacent to the project site are under the Zone 7 Special Drainage Area Program. These drainage ways would have to be improved to provide a 100-year flood protection. The developers may apply for an agreement with the Zone so that some of the costs may be recovered through the Program.

If some improvement of off-site drainage and flood control facilities are required, then the implementation of these measures is the responsibility of Zone 7, and the incremental costs for the new facilities would be apportioned to the various new developments in the area, based upon their relative contributions to the flow increase as provided for in Ordinance No. 53 as amended by Ordinances No. F.C. 67-1 and F.C. 67.3.



SURFACE DRAINAGE

FIGURE 4.11

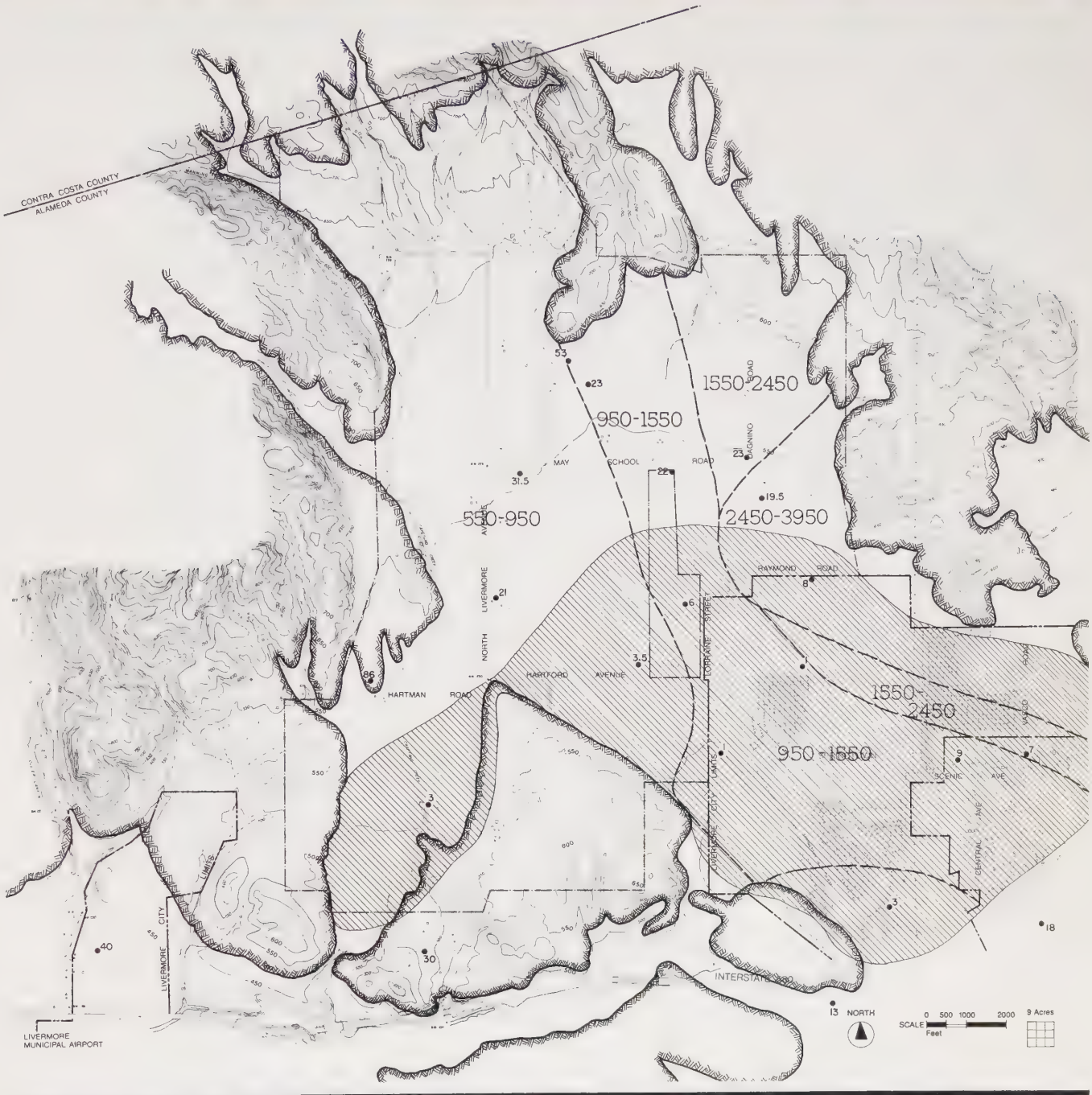
PRINCIPLE DRAINAGE WAYS

DRAINAGE AREA RIDGELINE

DRAINAGEWAY CAPACITY

SCALE: ARROW WIDTH PROPORTIONAL TO FLOW UNDER ASSUMED "LOW DENSITY" VALLEY DEVELOPMENT CONDITIONS

SOURCE: ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, JUNE 1973. WILSEY AND HAM



DEPTH TO WATER & TDS

FIGURE 4.12

EDGE OF ALLUVIUM

APPROXIMATE AREA OF HIGH WATER TABLE (<10± FT. IN DEPTH)

550-950 RANGE OF TOTAL DISSOLVED SOLIDS (TDS) (MG/LITER)

•30 WELL LOCATION AND DEPTH TO GROUNDWATER LEVEL IN FEET

SOURCE: COOPER AND CLARK

5.0 CULTURAL ENVIRONMENT

5.1 EMPLOYMENT AND ECONOMIC CONDITIONS

Setting

This section is divided into five major parts; the first four of these review recent economic and employment trends and present available or developed employment projections for the Bay Region, the San Francisco-Oakland Standard Metropolitan Statistical Area, the East Bay counties of Alameda and Contra Costa, and the defined Las Positas Primary Market Area, including communities in the Livermore-Amador and San Ramon Valleys. The fifth subsection reviews current employment/economic activity in the Livermore area and in the Las Positas project area.

Bay Area

Economic Trends

The San Francisco Bay area employment has steadily increased during the past several decades with an annual growth rate ranging from 3.6% during the late 1960's to 2.5% during the early 1970's. The slower growth rate during the early 1970's was due to the combined effects of defense and aerospace budget cutbacks and the 1974-75 recession. The years of 1975 to 1980 saw a period of extremely rapid economic growth in the Bay Area, due in great part to the fact that San Francisco was targeted as the major western headquarters location for a number of national and international firms. The Bay area became the financial center of the western United States. Further, the electronics industry in the "Silicon Valley" also experienced very rapid growth during this period. Growth in those sectors strongly contributed to the Bay area employment growth of 4.9% per year recorded during this period.

TABLE 5.1a
NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT
SAN FRANCISCO BAY AREA
1965 - 1980

Year	Number of Wage and Salary Workers (1000s)[3]	Average Annual Change From Preceding Date	
		Number	Percent
1965[1]	1,487.9		
1970[1]	1,754.7	53.4	3.6
1975[2]	1,971.8	43.3	2.5
1980[2]	2,455.2	96.7	4.9

1 California Employment Development Department, Employment Data and Research.
2 California Employment Development Department, Annual Planning Information (various dates)
3 Derived by Alameda County Planning Department from EDD estimates for San Francisco-Oakland, Santa Rosa, Vallejo/Fairfield/Napa, and San Jose Standard Metropolitan Statistical Areas.

Source: Alameda County Planning Department, March, 1983.

Projections: Bay Area

The Association of Bay Area Governments has prepared and is currently in the process of updating long-term forecasts of population, housing and employment for the San Francisco Bay Region. Forecasts of employment in the report Projections 79 (ABAG, January, 1980) are summarized in Table 5.1b for the Region.

Regional wage and salary employment, in Projections 79, is projected to expand at an annual average growth rate of 1.1 percent between 1980 and 2000. This is somewhat less than the 2 percent regional rate experienced between 1960 and 1975. The projected growth patterns reflect national trends which have shown increasing automation in manufacturing and slowdowns in the growth of population and housing. The Region, however, is expected to improve its relative position in the national economy with increasing shares of employment in key growth industries. The services sector is projected to be the fastest growing, reflecting long term shifts in the Region's economic structure paralleling those of the nation. The manufacturing sector is projected to grow at a rate of 1.2 percent per year. However, specific manufacturing activities producing high technology products such as electronic components, computers and scientific instruments are projected to grow at a substantially higher rate. Finance, insurance, real estate, government, trade, and other industries are expected to show moderate rates of growth, close to the overall average.

Absolute amounts of employment increase within the region are expected to follow existing patterns, with the greatest numerical increases in San Francisco, the Santa Clara Valley, and Oakland. The projected pattern of employment growth rates, however, somewhat de-emphasize the magnitude of employment growth in these existing centers. In these, the employment growth is projected to be moderate relative to the already large base. The growth rate in the area from Hayward south to San Jose stands out, both in terms of the growth rate, and in terms of the absolute magnitude of the projected employment increase. Also evident is the accelerating employment growth in the secondary regional centers of the Livermore-Amador Valley, southern Sonoma County, and Solano County.

TABLE 5.1b
ASSOCIATION OF BAY AREA GOVERNMENTS, PROJECTIONS 79
PROJECTIONS OF EMPLOYMENT, SAN FRANCISCO BAY REGION
1980 - 2000

	Number of Employed Individuals (1000's)[1]						1980-200 Net
	1975	1980	1985	1990	1995	2000	Change
Total Employment	2040.0	2355.5	2534.6	2670.2	2784.6	2860.1	504.6
Basic Employment	942.2	1041.2	1151.2	1168.8	1209.1	1232.0	190.8
Local Serving Employment	1097.8	1314.3	1419.4	1501.4	1575.6	1628.1	313.8

[1] Includes wage and salary workers (agricultural and nonagricultural), plus self-employed, unpaid family workers, and domestics.

Source: ABAG, Projections 79 (January, 1980).

Table 5.1b cont.
Incremental Growth (1000's)
Average Annual Change

	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	1980-2000
Total Employment	63.1	35.8	27.1	22.9	15.1	25.2
% Annual Growth Rate	3.1	1.5	1.1	0.8	0.5	1.1

Source: ABAG, Projections 79 (January, 1980)

ABAG is currently updating its regional economic and demographic forecasts. Preliminary (unofficial) forecasts[1] have been developed for the region and for the counties; these are presented in this DEIR. Forecasts for subareas were not available at the time of the preparation of this EIR but are expected to be released in the Spring of 1983. At the regional level, the forecasts indicate that job growth between 1977 and 1980 averaged 3.2 percent annually for all Bay Area industries. This growth is not expected to be experienced again in the long-range projections. The preliminary projections for the region indicate stronger rates of employment/economic growth than indicated in Projections 79. The latter allowed for a 1980-2000 annual rate of growth of 1.1 percent, with a net increase of 504,600 jobs through this period. The current preliminary projections show an average rate of 2.3 percent for the same period, with the net increase, 1980-2000, given as approximately 1.1 million new jobs. For industries associated with high technology (computers, electronics, and related activity), job growth averaged 13.1 percent. Office associated job growth employment grew at an annual average rate of 3.4 percent. These two sectors contributed almost entirely to the substantial growth between 1977 and 1980. Preliminary projections through year 2000 for the Region are presented in Table 5.1c.

Two regional forecasts were prepared for the period 1980-1985; a moderate growth forecast, and another that considers the most recent information on the regional economy and which could be characterized as a "low growth" scenario. Initially, ABAG short-term forecasts indicated a compound job growth of 2.4 percent annually between 1980 and 1985. Since these original forecasts were made in June 1981, the national and regional economies have deteriorated considerably. An adjusted "low" forecast indicates a total annual job growth of approximately 1.9 percent for the 1980-1985 period.

1/ Association of Bay Area Governments: DRAFT Long-Term Regional Economic and Demographic Forecast, 1980-2000 (working paper, 1981-82).

Table 5.1c
ASSOCIATION OF BAY AREA GOVERNMENTS
PRELIMINARY (UNOFFICIAL) EMPLOYMENT PROJECTIONS
SAN FRANCISCO BAY REGION
1980-2000

Number of Employed Individuals[1] (1000s)

	1977 Base	1980	1985	1990	1995	2000	1980-2000 Net Change
Total Employment	2207.8	2419.8	2652.4[2] 2710.6[3]	3024.0	3274.4	3574.4	1147.3

INCREMENTAL GROWTH (1000s)
AVERAGE ANNUAL CHANGE

	1977-1980[4]	1980-1985	1985-1990	1990-1995	1995-2000	1980-2000
Total Employment	70.2	46.5[2] 1.9	74.3[2] 2.8	50.1	58.5	57.4
% Annual Growth Rate	3.2	58.2[3] 2.4	62.7[3] 2.3	1.7	1.8	2.3

[1] Includes wage and salary workers (agricultural and nonagricultural), plus self-employed, unpaid family workers, and domestics.
[2] "Low" Forecast.
[3] "Moderate" Forecast.
Source: Alameda County Planning Department.

[4] 1975-1980 = ± 76.0 ACPD Estimate.
Source: Association of Bay Area Governments, DRAFT Long-Term Regional Economic and Demographic Forecast, 1980-2000 (working paper, 1981-82).

San Francisco-Oakland SMSA

Recent Trends and Short-Term Projections: SMSA

Employment in the San Francisco-Oakland Standard Metropolitan Statistical Area (Alameda, San Francisco, Contra Costa, San Mateo, and Marin Counties) increased by an average of 3.3 percent annually from 1975-1980 (3%, 1976-1980). Short-term projections by the State Employment Development Department[1] show this declining to an annual average of roughly 2.0 percent from 1975 to 1980. This is comparable to ABAG's current "low" forecast for the region and is attributed to several factors. First, in 1974-75 the entire region suffered from one of the steepest declines in the national economy since the depression of the

[1] State Employment Development Department, Projections of Employment by Industry and Occupation 1980-1985, San Francisco-Oakland SMSA (September 1982).

1930's. In large part, the relatively rapid expansion of the 1976-80 period represented a recovery from the 1974-75 recession. The current decade has started with another national recession, followed by a sluggish economy, then yet another downturn. The slowdown in projected local employment growth from 1980-85 partly reflects national economic problems and their restrictive effect on spending by business and consumers. It also reflects demographic trends which are expected to show a slower growth rate for the working-age population during the projection period.

Although at a slower pace than during the late 1970's, local employment growth is expected to raise employment in the SMSA by 170,000 from 1980 to 1985.

Growth rates for construction employment are expected to slow dramatically in the 1980-85 period with a decline in housing starts the chief cause of this reduced rate, in spite of a continuing demand for housing. It is expected that low office vacancy rates and rising rents for office space will continue to spur construction of commercial buildings around the Bay Area; among the more significant projects are additional office buildings in San Francisco and further development of downtown Oakland.

Manufacturing employment is expected to undergo sluggish overall growth, although trends will vary among individual manufacturing categories. In the durable goods sector, most of the job gains are expected in two industries: the electrical and electronic equipment industry, and the instrument manufacturing industry. These two are expected to account for nearly 6,000 new jobs by 1985 and would reflect gradual expansion of "high-tech" manufacturing, particularly in Alameda and Contra Costa Counties. Most other industries in the durable goods sector are expected to show relatively little change.

The outlook for nondurable manufacture is mixed, although a net employment growth of more than 5,000 is expected. Job gains would occur primarily in the printing and publishing industry, in the local garment industry, and in the petroleum industry's administrative operations. Offsetting some of this growth will be declines in food processing and in paper manufacturing.

Employment in transportation, communications, and utilities industries, where one out of every ten workers is employed by the government, is expected to increase slowly. Employment in communications and utilities is expected to expand by about 6,000 as a result of increasing demand for services and of changes in regulatory climate. This growth would stem in part from continued local commercial development and moderate population increases. In the transportation sector, long-term declines in railroads and water transportation are projected to be reinforced as mechanization and modernization of facilities cause further job reductions. Barring severe prolonged fuel restrictions, these losses should be more than offset by gains in trucking and warehousing, local transit, and transportation services. Air transportation, which laid off workers in recent years, should have recovered nearly to its 1980 employment level by 1985.

Trade should continue to be one of the largest and fastest growing industry groups. The retail trade sector is expected to account for three out of four new jobs in the division. Greatest gains will occur in eating and drinking places. Grocery, department, apparel, and appliance stores should continue to expand retail outlets and employment levels over the forecast period. Wholesale trade

Table 5.2
EMPLOYMENT[3] AND GROWTH RATES BY INDUSTRY
1976-1980, AND PROJECTED 1980-1985
SAN FRANCISCO-OAKLAND SMSA

Industry	Number of Employed Individuals[3](1000s)			Average Annual Growth Rate	
	1976	1980	Projected 1985	76-80	80-85
Total, All Industries[2]	1,460.3	1,670.9	1,840.9	3.6	2.0
Agriculture, Forestry, and Fisheries	15.5	18.2	19.6	4.4	1.5
Mining	2.3	3.0	4.1	7.6	7.3
Construction	71.0	89.9	92.4	6.7	0.6
Manufacturing	192.4	209.1	221.4	2.2	1.2
Durable Goods	95.4	105.6	112.5	2.7	1.3
Electrical Equipment	13.6	20.2	25.1	12.1	4.9
Instruments	3.3	4.7	5.6	10.6	3.8
All Other Durable Goods	78.5	80.7	81.8	0.7	0.3
Nondurable Goods	97.0	103.5	108.9	1.7	1.0
Food Processing	30.0	28.7	26.7	1.1	-1.4
Apparel	12.5	15.3	17.5	5.6	2.9
Paper and Kindred Products	7.8	6.4	5.7	4.5	-2.2
Printing and Publishing	19.1	22.3	25.4	4.2	2.8
Other Nondurable Goods	27.6	30.8	33.6	2.9	1.8
Transportation, Communication, and Utilities	133.8	144.1	152.4	1.9	1.2
Trade	333.6	388.9	449.2	4.1	3.1
Wholesale Trade	92.4	105.0	119.8	3.4	2.8
Retail Trade	241.1	283.9	329.4	4.4	3.2
General Merchandise	40.8	46.4	53.2	3.4	2.9
Food and Dairy Stores	33.5	37.6	42.8	3.1	2.8
Eating and Drinking Places	70.3	88.2	106.9	6.4	4.2
All Other Retail Trade	96.6	111.7	126.6	3.9	2.7
Finance, Insurance, and Real Estate	127.5	156.0	178.5	5.6	2.9
Finance	57.5	74.3	90.3	7.3	4.3
Insurance	39.1	47.1	51.3	5.1	1.8
Real Estate	30.9	34.6	36.9	3.0	1.3
Services	485.4	560.3	627.5	3.9	2.4
Hotels and Lodging Places	24.5	28.6	34.3	4.2	4.0
Miscellaneous Business Services	64.4	92.9	122.9	11.1	6.5
Medical and Other Health	96.1	108.6	121.8	3.3	2.4
Education	127.9	130.7	130.9	0.5	0.0
All Other Services	172.6	199.6	217.6	3.9	1.8
Public Administration[1]	98.8	101.4	95.9	0.7	-1.1

[1] A major proportion of government workers are assigned to the various industries in which they would appear if they were in private employment. Remaining in public administration are such groups as public officials, police officers and fire fighters, and employees of regulatory agencies.

[2] Individual line items may not add to totals because of rounding.

[3] Includes wage and salary workers (agricultural and nonagricultural) plus self-employed, unpaid family workers, and domestics.

Source: California Employment Development Department, Projections of Employment by Industry and Occupation, 1980-1985, San Francisco-Oakland Standard Metropolitan Statistical Area, Updated September 1982 (San Francisco, 1982)

employment will grow more slowly, although expanded wholesale activity should stimulate an average of 3,000 new jobs a year.

Finance-insurance-real estate companies are projected to have one of the highest rates of growth of any industry group in the Bay Area between 1980 and 1985. Further expansion of the California economy and of trade in the Pacific Basin should cause additional growth at the major banks headquartered in San Francisco. Small increases in Area population should also generate additional demand for financial services and necessitate the opening of new bank branches, credit agencies, and other financial offices. These institutions should account for more than three of every five new jobs in the finance-insurance-real estate complex. Insurance and real estate will register employment gains but at much slower rates than those posted by finance.

The services industry group is expected to add more workers between 1980 and 1985 than any of the Bay Area's other industry groups, in spite of declining employment in the public sector, which currently makes up about one-fourth of the total services employment. More than one-third of the additional jobs would result from demand for a variety of business service, with the most notable gains in firms supplying temporary help, business management, cleaning and maintenance, and security services. Although the period of spectacular employment expansion in medical and health services has passed, this sector should nevertheless be the second most important source of new jobs in the services industry group.

Employment in public administration should decline, reversing a long-term growth trend. Job losses should occur at nearly all levels as federal, state, and local governments continue to deal with serious fiscal problems.

East Bay: Alameda and Contra Costa Counties

Recent Trends: East Bay

Employment growth in the two East Bay counties has roughly paralleled regional and SMSA trends, declining during the early 1970s and accelerating during the latter half of that decade. Since the mid-1960s, the East Bay's share of total regional employment has declined from 31 percent to 28 percent of the total in 1980. The portion of new regional employment that was located in the East Bay also declined from 30 percent during the late 1960s and early 1970s to 20 percent during the late 1970s.

Recent trends in employment in the two counties are indicated in Table 5.3a. Between 1976 and 1980, total employment growth averaged 3.4 percent annually, comparable to the SMSA rate. Overall growth in manufacturing industries was very slow, due to declines in several sectors which offset significant rates of growth in electrical equipment, instruments, and in printing and publishing sectors. Growth in transportation, communications and public utilities industries matched the SMSA rate. Wholesale trade and retail trade grew, at 4.8 percent and 3.4 percent per year respectively, during the period. Rates of growth in finance, insurance, and real estate companies was slightly higher than rates for these in the SMSA; finance employment increased at an average of 8.9 percent per year. Growth in services was also strong and in most sectors exceeded rates in the SMSA.

Table 5.3a
NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT, BAY AREA,
SAN FRANCISCO-OAKLAND SMSA, ALAMEDA AND CONTRA COSTACOUNTIES
1965-1980

Number of Wage and Salary Workers (1000s)

	Bay Area	SF-Oakland SMSA	East Bay #	% of Bay Area	% of SMSA	Alameda County	Contra Costa County
1965	1487.9	1078.3	455.1	30.6	42.2	346.1	109.0
1970	1754.7	1254.7	538.3	30.7	42.9	406.0	132.3
1975	1971.8	1339.4	584.2	29.6	43.6	430.5	153.7
1980	2455.2	1571.1	684.7	27.8	43.6	487.4	197.3

Incremental Growth
Average Annual Change (1000s)

	Bay Area		SF-Oakland SMSA		East Bay		% of Bay Area	% of SMSA	Alameda County	Contra Costa County
	#	%	#	%	#	%			#	#
1965-70	53.4	3.6	35.3	3.3	16.6	3.7	31.1	47.0	12.0	4.6
1970-75	43.3	2.5	16.9	1.4	9.2	1.7	21.2	54.4	4.9	4.3
1975-80	96.7	4.9	46.3	3.5	20.1	3.4	20.8	43.5	11.4	8.7

Source: California Employment Development Department, Annual Planning Information (Various dates)

Table 5.3b
EMPLOYMENT AND GROWTH RATES BY INDUSTRY 1976-1980, EAST BAY, ALAMEDA COUNTY, CONTRA COSTA COUNTY

Number of Wage and Salary Workers[3] (1000s)

	1976 East Bay[3]	Ala.[1] County	Contra Costa[2] County	1980 East Bay[3]	Ala.[1] County	Contra Costa[2] County	Average Annual Growth Rate 1976-1980 East Bay
Total, All Industries	607.3	441.6	165.7	689.5	490.5	199.0	3.4%
Agriculture, Forestry and Fisheries	4.9	2.9	2.0	4.7	3.0	1.7	-1.0%
Mining & Construction	28.3	18.7	9.6	38.0	23.9	14.1	8.6%
Manufacturing	106.9	80.7	26.2	110.7	83.6	27.1	0.9%
Durable Goods	60.1	49.2	10.9	62.0	49.7	12.3	0.8%
Electrical Equipment	3.8	3.0	0.8	5.6	4.1	1.5	11.8%
Instruments	2.3	1.3	1.0	4.6	1.9	2.7	25.0%
All Other Durable Goods	40.7	27.2	13.5	38.5	27.9	10.6	-1.3%
Nondurable Goods	46.8	31.5	15.3	48.7	33.9	14.8	1.0%
Food Processing	16.2	13.5	2.7	15.1	12.9	2.2	-1.7%
Paper & Kindred Prod.	5.5	3.6	1.9	4.2	3.1	1.1	-5.9%
Printing & Publish.	5.9	4.5	1.4	7.9	5.8	2.1	12.5%
Other Nondurable Goods	19.2	9.9	9.3	21.5	12.1	9.4	3.0%
Transportation, Communications & Utilities	38.1	28.6	9.5	43.3	31.5	11.8	3.4%
Trade	138.9	97.6	41.3	165.3	112.5	52.8	4.8%
Wholesale Trade	33.3	26.5	6.8	37.8	29.1	8.7	3.4%
Retail Trade	105.6	71.1	34.5	127.5	83.4	44.1	5.2%
Finance, Insurance, and Real Estate	29.5	22.4	7.1	37.1	25.2	11.9	6.4%
Finance	12.7	9.5	3.2	17.2	11.7	5.5	8.9%
Insurance	8.9	7.0	1.7	9.7	6.7	3.0	2.9%
Real Estate	8.1	5.9	2.2	10.4	6.9	3.5	7.1%
Services	109.1	78.5	30.6	136.3	96.3	40.0	6.2%
Hotels & Lodging	3.1	2.5	.6	4.0	3.3	.7	7.3%
Business Services	20.3	14.9	5.4	28.8	20.4	8.4	10.5%
Medical & Other Health	35.1	25.5	9.6	42.5	31.1	11.4	5.3%
Education	5.4	4.0	1.4	6.3	4.2	2.1	4.2%
All Other Services	45.2	31.6	13.6	54.7	37.3	17.4	5.3%
Government	151.4	112.0	39.4	154.1	114.4	39.7	0.4%

1 Annual Planning Information, SF-Oakland SMSA, Alameda County, 1982-83 (Statistical Appendix. State of California Health and Welfare Agency, Employment Development Department Research Data and Research, May, 1982.
2 Annual Planning Information, SF-Oakland SMSA, Contra Costa County, 1982-1983. . . EDD
3 Derived by Alameda County Planning Department.

Source: Alameda County Planning Department, March, 1983.

Projections: East Bay

ABAG's Projections 79 indicate a total net increase, 1980-2000, of approximately 159,000 jobs in the East Bay counties. This is approximately 31 percent of the total net increase indicated for the Bay region, and a little more than half of the projected increase for the SMSA. Growth of employment averages 1.3 percent per year through the twenty year projection period, dropping from a 2.1 percent rate from 1975-1980. In the current (preliminary) ABAG forecasts, these have been revised upward. Total new employment added between 1980 and 2000 would total 277,000. Growth of employment through this period would average 1.9 percent annually. Growth in construction, transportation/communications/utilities, and trade would exceed this average.

Table 5.4a
ABAG PROJECTIONS 79[1]
PROJECTIONS OF EMPLOYMENT
ALAMEDA AND CONTRA COSTA
COUNTIES, 1980-2000

Number of Employed Individuals (1000s)[2]

	Base 1975	1980	1985	1990	1995	2000	Net Change 1980-2000
Alameda & Contra Costa Counties:							
Total Employment	594.4	657.4	705.3	749.2	786.6	815.9	158.5
% of Region	29.1	27.9	27.8	28.1	28.2	28.5	31.4
% of SMSA	43.3	43.7	43.7	44.1	44.6	45.0	52.1
Basic Employment	268.0	282.5	297.7	312.3	324.6	333.2	50.7
Local Serv. Employment	326.4	374.8	407.6	436.8	462.0	482.7	107.9

INCREMENTAL GROWTH (1000s)
AVERAGE ANNUAL GROWTH

	1975-80	1980-85	1985-90	1990-95	1995-2000	1980-2000
Alameda & Contra Costa Counties						
Total Employment	12.6	9.6	8.8	7.5	5.9	7.9
% of Region	20.0	26.8	32.5	32.8	39.1	
% of SMSA	47.5	44.6	50.6	60.3	60.4	
% Annual Growth Rate	2.1	1.4	1.2	1.0	0.7	1.3

1 Association of Bay Area Governments, Projections 79 (January 1980)
2 Wage and salary workers plus self-employed, unpaid family workers, and domestics.

Source: Alameda County Planning Department.

Table 5.4b
PRELIMINARY (UNOFFICIAL) EMPLOYMENT PROJECTIONS BY INDUSTRY
ALAMEDA AND CONTRA COSTA COUNTIES
1980-2000
ASSOCIATION OF BAY AREA GOVERNMENTS
February, 1983

Number of Jobs (1000s)[2]

Industry	1980 Base	2000	Net Change 1980-2000 #	Net Change 1980-2000 %	Average Annual Change #	Average Annual Change %
Total-All Industries[1]	715.6	992.5	277.0	38.7	13.9	1.9
Agricultural	6.9	5.9	-1.0	14.5	-0.05	-0.7
Nonagricultural	708.6	986.6	278.0	39.2	13.9	2.0
Mining	1.1	0.4	-0.7	-63.6	-0.04	-3.2
Construction	41.1	79.8	38.7	9.4	1.9	4.7
Manufacturing	117.2	157.8	40.6	34.6	2.0	1.7
Transportation and Public Utilities	45.9	68.5	22.5	49.0	1.1	2.5
Trade	162.9	268.9	106.0	65.0	5.3	3.3
Finance, Insurance and Real Estate	51.9	66.9	14.9	28.7	0.7	1.4
Services	212.4	265.1	52.7	24.8	2.6	1.2
Public Admin.[3]	76.1	79.3	3.3	4.3	0.2	0.02

1 Individual line items may not add to totals because of rounding.
2 Wage and salary workers plus self-employed, unpaid family workers, and domestics.
3 Proportion of government workers are assigned to various industries in which they would appear if they were in private employment. Remaining in public administration are such groups as public officials, police officers and firefighters, and employees of regulatory agencies.

Source: Association of Bay Area Governments, February 1983.

Primary Market Area

Recent Trends

The defined Primary Market Area (PMA) for the Las Positas proposal encompasses most of the Livermore-Amador and San Ramon Valleys and includes Livermore, Pleasanton, Dublin, and surrounding unincorporated areas in Alameda County and the San Ramon Valley area in Contra Costa County (see Figures 5.1 and 5.2). The PMA includes those areas in the two valleys which are within approximately 30 minutes driving time from the Las Positas project area. It excludes portions of Castro Valley and Hayward which are within this range (see Figure 5.2), insofar as these two communities historically have had stronger ties to other parts of the Bay Plain.

During the 1960s and 1970s, the area developed primarily as "bedroom communities" with the great majority of employed residents commuting to

employment centers elsewhere in the region. This, in particular, characterizes the communities of Pleasanton, Dublin, San Ramon, and Danville, where the highest rates of employment growth have been in services, trade, and local government sectors serving the expanding residential populations. This has not characterized the Livermore area, due for the most part to the large number of government (state/federal) jobs provided at the Lawrence Livermore Laboratory. These have made the Livermore area a "net importer" of workers.

Table 5.5 presents historical employment data for the Livermore Community Labor Market, which includes that portion of the Las Positas Primary Market Area in Alameda County. Estimates of employment were developed for the years 1955 through 1970. The surveys were discontinued in 1971. Comparable data is not available for the San Ramon Valley. The Labor Market data indicates the dominance of government employment in the Livermore-Amador Valley, again due to the presence of the Lawrence Livermore Laboratory. This facility grew from a small staff of 75 in 1952 to 5,600 employees in 1970. The number of LLL employees has since increased to 7,300 (1980). In 1960, LLL employment accounted for approximately 41 percent of the total employment in the Community Labor Market. Excluding this component, services becomes the major employment sector, representing 40 percent of the remaining 6,000 jobs in 1960. This is consistent with the needs of rapidly developing residential communities. From 1960 to 1965, employment (excluding LLL) increased to 11,000, at an average of 980 new jobs per year. A significant portion of these were in manufacturing industries, although the bulk was in local serving sectors (trade, services, local government). Growth in these local serving sectors remained strong through the remainder of the 1970s, again corresponding to very rapid rates of residential growth. Manufacturing, however, showed a net loss of employment, declining to 1,300 in 1970.

TABLE 5.5
LIVERMORE COMMUNITY LABOR MARKET
(LIVERMORE-AMADOR VALLEY)
EMPLOYMENT BY INDUSTRY,[1] EMPLOYMENT GROWTH
1960-1970

Industry	Employment by Industry[2] 1960	1965	1970	Net Change 1960-1970
Total - All Industries	10,300	16,400	21,100	10,800
(Total excluding LLL)	(6,100)	(11,000)	(15,500)	(9,400)
Agricultural	700	1,500	1,500	800
Nonagricultural	9,600	14,900	19,600	10,000
(excluding LLL)	(5,400)	(9,500)	(14,000)	(8,600)
Contract Construction	200	500	600	400
Manufacturing	800	1,600	1,300	500
Transportation, Communication, and Utilities	200	300	400	200
Wholesale and Retail Trade	800	1,300	2,200	1,400
Finance, Insurance, and Real Estate	100	300	600	500
Services	2,500	3,400	4,700	2,200
Government	4,900	7,400	9,700	4,800
(Gov't. excluding LLL)	(700)	(2,000)	(4,100)	(3,400)
(Lawrence Livermore Lab.)	(4,200)	(5,400)	(5,600)	(1,400)
Other	100	100	100	0

Note: All totals rounded to nearest 100

AVERAGE ANNUAL CHANGE IN EMPLOYMENT

Industry	1960-1965 #	1960-1965 %	1965-1970 #	1965-1970 %	1960-1970 #	1960-1970 %
Total - All Industries	1,220	11.8	940	5.7	1080	10.5
(Total excluding LLL)	(980)	(16.1)	(900)	(8.2)	(940)	(15.4)
Agricultural	160	22.9	0	--	80	11.4
Nonagricultural	1,060	11.0	940	6.3	1000	20.8
(excluding LLL)	(820)	(15.2)	(900)	(9.4)	860	15.9
Contract Construction	60	30.0	20	4.0	40	5.0
Manufacturing	160	20.0	-60	-3.8	50	6.3
Transportation, Communication, and utilities	20	10.0	20	6.7	20	10.0
Wholesale and Retail Trade	100	12.5	180	13.8	140	17.5
Finance, Insurance and Real Estate	40	40.0	60	20.0	50	50.0
Services	180	7.2	260	7.6	220	8.8
Government	500	10.2	460	6.2	480	9.8
(Government excluding LLL)	(260)	(37.1)	(420)	(21.0)	(340)	48.6
(LLL)	(240)	(5.7)	(40)	(0.7)	(140)	3.3
Other	0	--	0	--	0	--

[1]State of California Department of Human Resources Development, Community Labor Market Survey - Livermore (September 1960 through September 1970). Figure is for July of year.
[2]Includes wage and salary workers, self-employed, unpaid family workers, and domestics.

From 1970 to 1975, employment in the Livermore-Amador Valley increased at a rate of 700 new jobs per year to an estimated 24,600 jobs (Association of Bay Area Governments, Projections 79). This rate accelerated to approximately 1,100 new jobs per year for the period 1975-1980. Growth in the San Ramon Valley area (Contra Costa County) averaged 800 new jobs, resulting in a total average annual increase of 1,900 jobs in the Las Positas Primary Market Area.

Rapid employment growth in the San Ramon area and in the larger I-680 corridor of Contra Costa County is a relatively recent phenomenon. The trend became pronounced during the late 1970s with rapid growth of leasable office space in the corridor from Concord south to Walnut Creek. The trend has moved south to Danville and San Ramon and most recently to Dublin and Pleasanton. In 1981, within portions of the I-680 corridor in Contra Costa County, some 785,000 square feet of office space were constructed and leased, and an additional 1.3 million square feet were under construction, of which 330,000 square feet were pre-leased.[1] This growth has continued.

[1] Comfort Association "Contra Costa on the Move," August, 1981.

Table 5.6
EMPLOYMENT AND GROWTH RATES, BAY AREA
SAN FRANCISCO-OAKLAND SMSA, EAST BAY
(ALAMEDA AND CONTRA COSTA COUNTIES)
LAS POSITAS PRIMARY MARKET AREA
LIVERMORE-AMADOR VALLEY, SAN RAMON VALLEY
1975-1980

	Number of Employed Individuals (1000s)[1]			Average Annual Growth Rate	
	1975	1980	net change	# (1000s)	%
San Francisco Bay Area	2,040.0[4]	2,419.8[5]	379.8	76.0	3.7
San Francisco-Oakland SMSA	1,426.8[2]	1,670.9[3]	244.1	48.8	3.4
East Bay	594.4[4]	715.6[5]	121.2	24.2	4.1
Las Positas Primary Market Area	29.8	39.2	9.4	1.9	6.3
% of Bay Area	1.5%	1.6%	3.9%		
% of SMSA	2.1%	2.3%	3.9%		
% of East Bay	5.0%	5.4%	7.8%		
Livermore-Amador Valley	24.6[4]	30.1[6]	5.5	1.1	4.5
San Ramon Valley	5.2[4]	9.1[6]	3.9	0.8	15.0

1 Includes wage and salary workers (agricultural and nonagricultural) plus self-employed, unpaid family workers, and domestics.
2 Derived by Alameda County Planning Department based on EDD yearly wage and salary employees estimates adjusted to include self-employed, unpaid family workers and domestics.
3 California Employment Development Department, Projections of Employment. . .1980-1985, San Francisco-Oakland SMSA (Update, September 1982).
4 Association of Bay Area Governments, Projections 79 (January 1980).
5 Association of Bay Area Governments, Preliminary (Unofficial) Forecasts (February, 1982 and 1983).
6 Estimated by the Deane Organization, based on ABAG Projections 79 adjusted upwards based on increased observed rates of commercial/office development during the late 1970s.

Employment Projections: Las Positas Primary Market Area (PMA)

A series of employment projections for the Primary Market Area are considered. These include: 1) projections of total and of basic and local serving employment as given in ABAB's Projections 79; 2) a projection based on potential employment which could occur in announced and identified commercial and industrial "projects" in the PMA; and 3) trend projections reflecting a) recent (1975-1989) rates of change in PMA employment, and b) changes in assumptions regarding projected rates of change in Regional and East Bay employment. These alternative projections yield a very broad range of employment growth for the PMA, from a low of 16,600 new jobs added, 1980-2000, in Projections 79 to a high of 99,100 jobs added under the "projects" projection. The trends projections yield amounts of employment growth between these two extremes--30,000 to 40,000 jobs added, 1980-2000. Because these middle rates are more in line with current projections for the Region and for the East Bay, it is recommended that they be used in the current DEIR.

1. ABAG: Projections 79 and Projections Update

Table 5.7 presents projections of employment and housing for defined communities in the Las Positas Primary Market Area as given in ABAG's Projections 79 (ABAG, January 1980). From 1975 to 1980[1], total employment is projected to increase by 5,109 jobs, at an average of 1020 jobs per year. This rate of growth is projected to decline to 850 jobs per year from 1980 to 1985, and for the 20 year projection period 1980-2000 is expected to average approximately 830 new jobs per year.

In the Pleasanton Area (including Dublin) and the San Ramon Valley, most new employment is projected to occur in local serving sectors (retail trade, services, local government) corresponding to demands of the expanding residential population. Comparable rates of growth in these sectors is also projected in the Livermore Area. However, Livermore, unlike the other communities, is projected to gain approximately 5,800 new jobs in basic employment sectors, or approximately 85 percent of total new basic employment in the PMA. It is probable that much of this would be in or related to the activities of the Lawrence Livermore and Sandia Laboratories, which in 1980 had a combined employment of approximately 8,600 employees (68% of 1980 projected basic employment in the Livermore Area).

Table 5.7 also indicates the relationships between projected housing (occupied dwelling units or households) and projected employment--the "job/housing ratio." On a region-wide basis, the corresponding ratio was 1.2 jobs per household. A job/housing ratio greater than 1.2 would indicate net "in-commuting" of workers. A ratio less than 1.2 would indicate a net "out-commuting" of workers. Currently, the great majority of employed residents in the PMA commute to employment centers elsewhere in the region. In Projections 79, the job/housing ratios indicate increasing rates of net out-commuting for each of the subareas, with the PMA average declining from .69/1 in 1980 to .59/1 in year 2000. Implicit in the projections, therefore, is the assumption that the PMA will remain a

[1] This is a projection rather than an estimate of existing 1980 employment.

"bedroom" community, with the majority of residents continuing to commute to jobs outside the PMA and with employment growth in the PMA consisting primarily of local serving jobs. This assumption did not anticipate the rapid rates of commercial and office development in portions of the PMA during the end of the 1970s.

As previously indicated, ABAG is currently revising its population, housing, and employment forecasts. Available preliminary projections of employment for the Bay region and for Alameda and Contra Costa Counties have been included in this report. Projections of basic and local serving employment for the communities were not available at the time of the preparation of this DEIR but are expected to be released in the spring of 1983. It is expected that the revised local area projections for the PMA will be higher than those in Projections 79. First, preliminary revised projections indicate higher ultimate levels and higher rates of employment growth for the Region and for Alameda and Contra Costa Counties than in Projections 79. Second, as indicated, much of the recent employment growth in the San Ramon Valley area and Pleasanton area was not foreseen in the preparation of Projections 79, but will be reflected in the forecast revisions.

TABLE 5.7
ABAG PROJECTIONS 79
EMPLOYMENT AND HOUSING IN THE PRIMARY MARKET AREA
1975-2000

	Base 1975	1980	1985	1990	1995	2000	Net Change 1980 - 2000
Livermore Area							
Employment	16,787	19,843	21,980	24,065	27,217	30,121	10,278
Basic	10,852	12,560	13,817	15,097	16,776	18,385	5,825
Loc. Serv.	5,835	7,283	8,163	8,968	10,441	11,736	4,453
Occupied Dwelling Units		15,844	18,144	21,110	24,727	28,204	12,360
Job/Housing Ratio[1]		1.25:1	1.21:1	1.14:1	1.14:1	1.07:1	.83:1
Pleasanton Area							
Employment	7,799	8,904	10,574	12,312	13,190	13,882	4,978
Basic	2,622	2,885	3,091	3,236	3,429	3,547	662
Loc. Serv.	5,177	6,019	7,483	9,076	9,761	10,335	4,316
Occupied Dwelling Units		16,013	19,958	22,450	24,016	25,349	9,336
Job/Housing Ratio[1]		.56:1	.53:1	.55:1	.55:1	.55:1	.53:1
San Ramon Valley							
Employment	5,183	6,131	6,602	6,953	7,253	7,492	1,361
Basic	1,761	1,801	1,876	1,955	2,037	2,096	295
Loc. Serv.	3,422	4,330	4,726	4,998	5,216	5,396	1,066
Occupied Dwelling Units		18,813	25,466	30,237	32,126	33,389	14,576
Job/Housing Ratio[1]		.33:1	.26:1	.23:1	.23:1	.22:1	.09:1
Total for Primary Market Area							
Employment	29,769	34,878	39,156	43,330	47,660	51,495	16,617
Basic	15,235	17,246	18,784	20,288	22,242	24,028	6,782
Loc. Serv.	14,534	17,632	20,372	23,042	25,418	27,467	9,835
Occupied Dwelling Units		50,670	63,568	73,797	80,869	86,942	36,272
Job/Housing Ratio[1]		.69:1	.62:1	.59:1	.59:1	.59:1	.46:1

[1]The job/housing ratio, if less than roughly 1.2:1, indicates the area is a net exporter of labor.

Source: ABAG, Projections '79 (January 1980).

2. Potential Employment Growth in Announced or Identified Commercial and Industrial Projects: PMA

Tables 5.8a through 5.8e summarize commercial and industrial projects in the PMA which have been announced and/or identified in several recent surveys. The potential impacts of these on Area employment levels could be significant. If fully built-out and occupied, they would add approximately 40 million square feet of floor area and provide employment for approximately 101,000. Most of the projects are projected to be completed prior to the year 2000. Hacienda Business Park in Pleasanton, with an estimated 12 million square feet of floor space at build-out, is projected to be approximately 81 percent built-out by 2000. Adjusting for this yields the potential from 1980 to 2000 for an addition of approximately 37.2 million square feet of floor area and of 91,400 jobs within the projects.

Adjusting the PMA projected employment figures to allow for vacancies and to account for secondary employment impacts of the announced projects would yield slightly different projections (as would alternative assumptions regarding employee densities, rates of build-out, etc.). A normal vacancy rate of 10 percent would reduce the total from 91,400 to approximately 82,200 new jobs. A higher rate, such as 25 percent, has been suggested and would result in a net increase in employment, 1980-2000, of 68,600.

Secondary employment impacts of approved commercial/industrial projects in Pleasanton were recently evaluated (Gruen Gruen + Associates, An Analysis of the Secondary Employment Impacts of Approved North Pleasanton Commercial/Industrial Development, November, 1982). The study indicates rates of 1.3 to 1.9 new secondary jobs for each new "direct" job. This is the estimated total impact in the Bay Region. It is estimated that 4 to 5 percent of the generated secondary jobs would be accommodated in the Pleasanton developments themselves, reducing the space available for, but also slightly reducing the secondary employment impacts of, "direct" businesses. The Gruen report indicates that approximately 20 percent of the secondary employment impacts would be in the Livermore-Amador and San Ramon Valleys (Las Positas Primary Market Area), but note that this estimate represents a conservative "upper bounds" insofar as it is equal to Alameda County's estimated share of regional impacts (using an "employment share" approach which assumes the County's attractiveness for a given sector of secondary impact is proportional to the county's existing share of regional employment in that sector).

Applying these general factors to the total projected employment in announced/identified projects in the PMA yields a range of 86,100 to 99,100 new jobs in the PMA. Approximately 80 percent of these would occur as both "direct" and "secondary" employment within the projects. Twenty percent of the total would occur as "secondary" employment, induced by the projects, but located elsewhere in the Livermore-Amador and San Ramon Valleys. Basic assumptions in these estimates are:

- o Vacancy rates in the projects would range from 10 to 25 percent (project areas only).

- o "Direct" employment in the projects would equal approximately 95 percent of total projects employment, adjusted for vacancies. The

remaining 5 percent would be "secondary" employment.

- Approximately 1.6 "secondary" jobs would be generated in the Bay Region for each "direct" job in the projects.

- Approximately 20 percent of Bay Region "secondary" jobs induced by the projects would locate in the Livermore-Amador and San Ramon Valleys. A portion of these would occur in the projects' areas.

- Any other secondary employment in the Valleys generated by employment elsewhere in the region would be negligible.

It is questionable whether the employment levels indicated above (adjusted or unadjusted) will actually be achieved. If it did occur, the PMA would capture nearly 33 percent of total new jobs projected by ABAG for Alameda and Contra Costa counties (preliminary projections, February, 1983). Employment growth in the PMA would average, for 1980 through 2000, approximately 4,500 new jobs per year. By comparison, it is estimated that growth in the PMA between 1975 and 1980 (a period of relatively rapid growth) averaged only 1,900 new jobs per year. The total net change in employment for this five-year period (approximately 9,400 jobs) represented only 8 percent of the total increase in employment in the two counties (9,400 jobs of 121,200 net increase).

The potential employment levels must also be questioned in the absence of any comprehensive market demand analysis for the Valleys, which analysis would also need to consider a number of local and regional conditions and trends tending to constrain future development (e.g., short and possibly long-term limits on water supply and sewage treatment and disposal capacity; possible shortfalls in the housing supply; fluctuations in the regional and national economies; and local political resistance to proposed industrial and commercial projects). Such a comprehensive analysis is beyond the scope of the current Draft EIR.

TABLE 5.8a
PROJECTS-BASED PROJECTION OF EMPLOYMENT
LAS POSITAS PRIMARY MARKET AREA
1980-2000

Number of Jobs (1000s)

	1975 Estimate	1980 Estimate	2000 Projection	Net Increase 1980-2000	Average Annual Change: 1980-2000
Total	29.8	39.2	125.3	86.1	4.3
			138.3	99.1	5.0

Alameda County Planning Department, February, 1983.

TABLE 5.8b
ANNOUNCED/IDENTIFIED COMMERCIAL AND INDUSTRIAL PROJECTS
LIVERMORE AREA
1980-2000±

	Project	Acres	Square Feet of Floor Space	Estimated Employees at Buildout
1.	Tri Ad Corporation	153	NA	5,355[1]
2.	Shaheen Industrial Park	21	NA	735[1]
3.	Airport Industrial Park	90	NA	3,150[1]
4.	Southern Pacific and Adjacent Property	185	NA	4,625[2]
5.	The Old Brickyard	8.5	125,000	370[3]
TOTAL at Buildout		475.5	7,100,000 to 9,500,000[4]	14,235
TOTAL by 2000±		475.5		14,235

[1]Assuming 35 employees per acre.
[2]Assuming 25 employees per acre.
[3]Assuming 350 square feet per employee.
[4]Estimate by Alameda County Planning Department (February, 1983), assuming between 15,000 to 20,000 square feet of floor space per acre.

Source: CPS & Associates (1983)

TABLE 5.8c
ANNOUNCED/IDENTIFIED COMMERCIAL AND INDUSTRIAL PROJECTS
CITY OF PLEASANTON
1980 - 2000±

	Project	Acres	Square Feet of Floor Space[3]	Estimated Employees at Buildout[4]
1.	Hacienda Business Park Phase I		8,037,200[1]	25,620[6]
2.	Hacienda Business Park Phase II		4,535,000[1]	15,060[6]
3.	Johnson Industrial Park		32,700[2]	90
4.	Reynolds and Brown		808,000	2,310
5.	Meyer		1,250,200	3,570
6.	Hopyard		281,000	800
7.	Old Santa Rita Road		128,000	370
8.	West Las Positas		87,000	250
9.	Valley Business Park		915,000	2,600
10.	Fromm		1,050,000	3,000
11.	Farmers Insurance		162,500	460
12.	Axion		80,000[5]	230
13.	Tronery		320,000[5]	910
14.	Atrium-Imperial		82,100	230
15.	Kaiser		92,800	270
16.	McMahon-Oliphant		43,500	120
17.	Pleasanton Gateway		60,000	170
18.	Centerpoint-Sammis		152,200	430
19.	Kacor		165,200	470
20.	Courtney		110,000	310
21.	Rheem		160,000	460
22.	Pleasanton Partnership		63,000	180
23.	Clorox		33,000	100
TOTAL at Buildout			18,649,000	57,010
TOTAL by 2000±[6]			16,309,650	47,090

[1]Per CPS & Associates, 1983.
[2]Development is about 75 percent built-out (January, 1983). Approximately 33,000 square feet are currently under construction. No projects are currently proposed for remaining 20 acres.
[3]Per development schedules prepared for CRIS fiscal impact model by City of Pleasanton and project owners/developers, except as otherwise footnoted.
[4]Assuming 350 square feet per employee, except Hacienda figures which were provided by CPS & Associates. All rounded to nearest 10.
[5]Per City of Pleasanton Finance Director communication with Gruen Gruen + Associates, November, 1982.
[6]Per CPS & Associates, Hacienda Phase I will be 85 percent built-out by 2000; Phase II will be 75 percent built-out.

Source: Gruen Gruen + Associates

TABLE 5.8d

ANNOUNCED/IDENTIFIED COMMERCIAL AND INDUSTRIAL PROJECTS
DUBLIN[1]
1980-2000±

Project	Acres	Square Feet of Space[3]	Estimated Employees[2] at Buildout
1. Sierra Ct.	3	70,000	140
2. Enea Plaza	7	144,000	400
3. Silvergate	5	100,000	285
4. Trinity Ct.	2	42,000	80
5. Other Minor Projects	12	250,000	650
TOTAL at Buildout	30	606,000	1,555
TOTAL by 2000	30	606,000	1,555

1 No major commercial/industrial development is projected due to a shortage of available land. This could change significantly, however, if portions of the Camp Parks Military Reservation become available.

2 Based on 45% FAR.

3 Based on 350 sq. ft. per employee.

Source: SRI International, Western Real Estate News, Vol. 340 No. 16, August, 1981.

TABLE 5.8e

ANNOUNCED/IDENTIFIED COMMERCIAL AND INDUSTRIAL PROJECTS
SAN RAMON VALLEY
1980-2000±

	Project	Acres	Square Feet of Space[3]	Estimated Employees[2] at Buildout
1.	Canyon Place	7.0	115,000	350
2.	Bishop Ranch	585	7,500,000	15,000
3.	Commons	12.3	230,000	700
4.	Crow Canyon	10	20,000	570
5.	Park Place	20	83,500	250
6.	Deerwood	50	480,000	1,500
7.	Unnamed	6.6	112,000	560
8.	The Old Mill	10	340,000	1,030
9.	Projects Underway		9,060,000	19,960
10.	Other Projects Announced		3,000,000	8,510
TOTAL at Buildout		701	12,000,000	28,470
TOTAL by 2000		701	12,000,000	28,470

Source: Comfort and Associates, "Contra Costa on the Move".

3. Trend Projections of Employment: PMA

Two trend projections are considered. The first is a simple extension of 1975-1980 employment growth trends in the Primary Market Area through the 1980-2000 projection period. The second is an adjustment to PMA employment growth rates based on changes in regional growth rates indicated in recent ABAG regional employment projections. The results of both are similar.

a. Continuation of 1975-1980 PMA Trend

This projection allows for an average rate of growth through the twenty-year projection period equal to the numerical rate of increase estimated for the 1975-1980 period, or approximately 1,900 to 2,000 new jobs per year. This would result in the addition of 38,000 to 40,000 new jobs by 2000. Total employment in the PMA would increase from an estimated 39,200 jobs in 1980 to between 77,200 and 79,200 jobs in 2000, at an annual growth rate of between 4.8 and 5.1 percent (20 year average). The increment of growth would equal approximately 14 percent of the total change in employment currently projected by ABAG (preliminary projections, February 1983) for Alameda and Contra Costa counties. This would also constitute a higher rate of job capture than during the 1975-1980 period, when the PMA received approximately 8 percent of the East Bay's new jobs. This higher rate of capture may be reasonable; however, considering that those sectors expected to locate in the PMA--wholesale and retail trade, finance/insurance/real estate, services, and, to a lesser extent, electronic manufacturing--are projected to show very strong rates of growth in the region and in the East Bay.

Table 9a
TREND PROJECTION "A": CONTINUATION OF 1975-1980 PMA TREND
LAS POSITAS PRIMARY MARKET AREA
1980-2000

Number of Jobs (1000s)

	1975 Estimate	1980 Estimate	2000 Projection	Net Increase 1980-2000	Average Annual Change: 1980-2000
Total	29.8	39.2	77.2	38.0	1.9
			79.2	40.0	2.0

Alameda County Planning Department, February, 1983.

b. Adjusted Growth Rates per County and Regional Revised Projections

ABAG's recent (preliminary) projections of employment for the Bay Region and for Alameda and Contra Costa counties indicate considerably higher rates of employment growth than given in Projections 79. At the regional level, the projected change in employment is expected to be more than double that in the earlier projections (1,147,300 in the current projections compared to 504,600 new jobs, 1980-2000, in Projections 79). Current ABAG projections for the East Bay counties are 75 percent higher than earlier projections (277,000 compared to 158,500 jobs added, 1980-2000). It is

expected that employment growth in the Primary Market Area will at least equal the counties' rates over the 20 year period. It is assumed that it would not greatly exceed the projected rate of growth indicated for the Region.

ABAG's Projections 79 currently indicates an average increase in the PMA of approximately 830 jobs per year, 1980-2000. This would be increased to approximately 1,500 jobs per year, if comparable to ABAG's adjusted growth rate for the two counties; and to approximately 1,900 jobs per year if comparable to the adjusted Regional rate. The resulting projected growth for the 20-year period is comparable to that indicated in the 1975-1980 Trend Projection and would be 30,000 to 38,000 jobs. Total employment in the PMA would increase from 39,200 jobs in 1980 to between 69,200 and 77,200 jobs in 2000, an average annual growth rate of between 3.8 and 4.8 percent. The increment of growth would be approximately 11 to 14 percent of total change in employment projected for the East Bay.

Table 5.9b
TREND PROJECTION "B": ADJUSTED PMA GROWTH RATES PER REGIONAL COUNTY REVISED PROJECTIONS LAS POSITAS PRIMARY MARKET AREA 1980-2000

	1975 Estimate	1980 Estimate	2000 Projection	Net Increase 1980-2000	Average Annual Change: 1980-2000
Total	29.8	39.2	69.2	30.0	1.5
			77.2	38.0	1.9

Alameda County Planning Department, February 1983.

Livermore and Environs/Project Area

Over 45 percent of the labor force in the immediate Livermore area is employed by two corporations: the Lawrence Livermore Laboratory and the Sandia Corporation's Livermore facility. Both firms are prime contractors to the U.S. Department of Energy. Other types of employment cover a wide range of skilled and semi-skilled workers including laborers, white-collar workers, technicians, mechanics, electronics specialists, winery operators and general manufacturers. There are 14 manufacturing plants in electronics, wine, plastics and primary and fabricated metals. Non-manufacturing companies make up the largest employee base with emphasis in the research and development and sand and gravel businesses as shown in Table 5.10.

One of the unique characteristics of the Livermore labor base is that 64% of the employees working in the Livermore area reside there[1/]. The Livermore area is a net importer of labor, primarily because of Lawrence Livermore and Sandia Labs. Most of the other communities in the area export labor to other employment centers.

In the past few years, employment and population growth has been limited due to the lack of available wastewater capacity and local growth management policies. Between 1970 and 1975, job growth increased at twice the regional rate. Total

[1]San Francisco Bay Area Economic Profile. ABAG, 1980.

employment increased by 95 percent between 1965 and 1978, with the largest segment of the labor force employed in professional and managerial jobs[2/].

The present economy of Las Positas Valley (project area) is almost exclusively agricultural. Cattle grazing and crop cultivation predominate and oat hay is widely grown. Some limited employment is provided at the FCC Monitoring Station and at the Pleasanton Rod and Gun Club.

The agricultural potential of approximately 3,500 acres within the Project Area has been recently evaluated (A.D. Reed, Agricultural Economist, Technical Report, The Agricultural Potential of the Las Positas Properties, January, 1982). The report is included as Appendix H in the current EIR, and is summarized below.

Most soil types in the area are Class III and IV under the USDA Soil Conservation Service classes and are suitable for cultivation. The area climate is mild, with moist winters and hot dry summers. The area is occasionally subject to strong north winds; these have made it difficult to harvest some crops that were tried in the area and have triggered respiratory problems with livestock during the winter. Irrigation possibilities are extremely limited, due to the small amount of available groundwater in the area, the low output of wells, and the amount of salt in the water. Increases in energy costs also appear to limit the profitability of irrigation in the area.

The area is presently used for the production of small grains, largely barley, grain hay, and pasture. Growers have tried other crops such as beans and safflower, but their production has not been successful due to weather, pests and cost factors. Most of the area is farmed by growers who use this land in conjunction with other property in order to generate sufficient income to support their families. Smaller growers are engaged in a number of nonfarm activities to supplement their agricultural income.

Due primarily to the lack of irrigation water any major change in agriculture in the area is determined to be unlikely. The report indicates that small grain, grain hay, and pasture are the only non-irrigated crops suitable for the soils and climate. These are low return, and rather extensive types of agriculture (net incomes are $22 to $25 per care for barley and hay grain, $15 per cow for weaner calves). This situation would probably not change since, historically, farm costs have risen faster than farm income. The report concludes that most farmers are now able, and could continue to operate by accepting very low returns for their labor, management and investments. Smaller farmers would have to continue to engage in non-agricultural activities to support their families, or would need to sell off small blocks of land to obtain a cash flow.

[2]Northbluff Feasibility Study, Deane Organization

TABLE 5.10
LIVERMORE AREA BASIC EMPLOYMENT BASE

Manufacturing

Name of Company	Employment	Products
Intel	450	Electronic memory systems
Wente Brothers	120*	Wines
California Steel Works, Inc.	109	Reinforcing bars and fence posts
Silver Metal Products	100	Metal products serving the construction industry
Lox Equipment Company	82	Cryogenic vessels
Hexcel Corporation	80	Fiber composites
United Security Products	60	Security devices
Concannon Vineyards	59*	Wines
Livermore Data Systems	51	Mobile and portable telephones
Amador Steel Corporation	18	Reinforcing bars
Landalloy, Inc.	18	Machined metal products

*Including seasonal workers

Non-Manufacturing

Name of Company	Employment	Products
Lawrence Livermore Laboratories	7,484	Research
Sandia Laboratories	1,070	Research and development
Valley Memorial Hospital	529	Hospital
Kaiser Sand and Gravel	212	Sand and gravel mining
Rhodes-Jamieson	137	Sand and gravel mining
Pacific Gas & Electric Co.	107	Public utility

Note: Intel has plans to add to their existing facility with a projected 700 additional employees.

Source: Livermore Chamber of Commerce, Community Economic Profile (Livermore: Livermore Chamber of Commerce, May 1981)

McMasters & Westland, Livermore Industrial Market Presentation

Impacts

Two categories of general economic/employment impacts are considered in this section. First are direct effects of the Las Positas proposal on employment within the project area--the generation of construction jobs during project build-out, and the creation of permanent employment in proposed commercial, industrial, office, and institutional uses. Second are indirect employment effects within the Primary Market Area and region (including the project area). These indirect effects would include secondary employment impacts of new office and industrial development and the possible effects of the project on the projected amounts of distribution of employment within the PMA (resulting from its competition with other commercial and industrial projects).

The project's fiscal impacts (on public agencies) are addressed in Section 5.8. Effects concerning the balance between housing supplies and employment are addressed in Section 5.2.

a. Direct Effects

Table 5.11 outlines the estimated employment which would be generated by proposed Las Positas commercial, business and industrial, and institutional uses at buildout. The long-term employment is estimated to total approximately 22,195 jobs. In addition to these, the development would also generate an estimated 20,700 person-years of construction employment (Table 5.12).

TABLE 5.11
LAS POSITAS EMPLOYMENT ESTIMATES

	Acres at Buildout	Jobs at Buildout[1]
Commercial		
Office	60	2,100[2]
Town Center	40	800[3]
Village Center	48	960[3]
Neighborhood Center	15	300[3]
Business Park	483	16,905[2]
Subtotal		21,065
Public and Institutional		
Government	220	902
Religious and other	30	228
Total		22,195

[1]Assuming no vacancies in commercial or business park uses.
[2]35 employees per acre.
[3]20 employees per acre.

Source: Wilsey & Ham

TABLE 5.12
LAS POSITAS CONSTRUCTION EMPLOYMENT ESTIMATES

Area or Facility	Acres	Person Years of Employment
Residential	18,000 DU	15,480
Commercial		
Office	60	300
Town Center	40	204
Village Center	48	221
Neighborhood Center	15	69
Industrial	483	2,029
Public and Institutional		
Government	220	1,628
Religious and other	30	195
Parks	230	345
Major Roads	300	240
Total		20,711

About 13,200 jobs would be expected to be available in Las Positas by the year 2000. Almost 30 percent of these would be created by local commercial facilities, schools and churches. The remainder would be development of business parks, principally along North Livermore Avenue north of the interchange with I-580. Over 40 percent of all jobs ultimately provided for by Las Positas would result from office/industrial/commercial development planned to occur after the year 2000. A great number of these jobs would be associated with the proposed town center. The remainder of the new jobs expected after the year 2000 would be due to new schools, municipal facilities and the completion of the business park and office area located near the town center.

b. Indirect Effects

Construction activities in the proposed Las Positas project are expected to continue over a 20 to 25 year period (including pre-development). The secondary employment impacts of this activity, while potentially significant, would be temporary and are not estimated in this report.

Effects of proposed permanent employment in Las Positas are evaluated.

Secondary Employment Impacts

All projected economic activity in Las Positas can be expected to have indirect or secondary impacts bearing upon other parts of the region and on the project itself. The current analysis focuses on the secondary employment impacts resulting from proposed/projected employment in the project's commercial office and business/industrial park areas. The major part of employment in these

areas is considered to be "basic" or "direct" employment which would, in turn, generate other "secondary" and/or "local serving" jobs as the new businesses purchase goods and services, including labor needed to produce their outputs. Employment elsewhere in the project area, in the village, town, and neighborhood commercial centers, and in public and institutional uses, are assumed to be "local serving" and would constitute a part of the "secondary" employment generated by "direct employment in Las Positas and elsewhere in the PMA and region.

The actual sectoral mix of direct employment that would be accommodated in the Las Positas commercial and business/industrial park areas is not known. It is, therefore, proposed that a general sense of project "secondary" employment impacts be derived through application of "average" factors indicated in the Gruen Gruen + Associates study of North Pleasanton commercial and industrial developments[1]. This method yields a "secondary" employment impact totalling 26,000 jobs at project buildout, and 15,500 in 2000. Basic assumptions are:

- Vacancy rates averaging 10 percent.

- Electronic components, equipment, and kindred; wholesale and retail trade; finance, insurance, and real estate; and business, professional, and personal services as the predominant direct employment sectors.

- Direct employment in the Las Positas office/business/industrial areas equalling approximately 95 percent of total employment in these areas, adjusted for vacancies. The remaining 5 percent would be a component of the "secondary" employment impact.

The secondary employment impact would be distributed within the region. In the Pleasanton study, 20 percent of this total was considered the "upper bound" for the Livermore-Amador and San Ramon Valleys. This factor would result in a net impact in the PMA of approximately 5,200 secondary jobs generated by Las Positas direct employment (3,100 in 2000). It is assumed that approximately 1,200 of this would occur within the Las Positas office commercial and industrial/business parks (700 in 2000). The remaining 4,000 secondary jobs (2,000 in year 2000) would be distributed in the PMA. It is probable that the major portion of these would be located in Las Positas as components of the proposed neighborhood, village, and town commercial centers and of the proposed government and institutional uses.

[1] Gruen Gruen + Associates, An Analysis of Secondary Employment Impacts of Approved North Pleasanton Commercial/Industrial Development (November, 1982). The Gruen study considers three scenarios, each with a different sectoral mix of direct jobs. The first includes 100 percent of its space in electronic components, equipment, and kindred; the second includes 50 percent of space in finance/insurance/real estate, and 50 percent in services; and the third divides space equally into four sectors--electronics components, equipment, and kindred; finance/insurance/real estate; wholesale/retail trade; and business/professional and personal services. Each scenario resulted in different "secondary" impacts. The current analysis uses factors which are a rough average of those indicated in the Gruen study.

Project Effects on Projected Amounts and Distribution of Employment Within the Primary Market Area

Because the Las Positas project is proposed to provide additional housing, rather than to provide for a redistribution of housing in the PMA, it is reasonably concluded that most of the local serving component of Las Positas employment in town/village/neighborhood commercial centers and in public and institutional uses would constitute a net addition to employment in the Primary Market Area. These centers and uses would be provided in direct response to the additional PMA population located in the Las Positas development.

Lacking a comprehensive market demand analysis for the Livermore-Amador and San Ramon Valleys, it is not possible to clearly indicate whether all or the basic employment growth indicated for the Las Positas project would constitute a net increase to that otherwise projected for the Valleys or a redistribution of basic employment growth. An effect somewhere between these extremes is probable. For purposes of evaluating project impacts on air quality, traffic, water supply, and public costs and revenues, a "worst case" assumption is made that all employment in Las Positas is new to the PMA. In the current section, the consequences of an alternative assumption are also briefly reviewed. In both cases, moderate employment growth in the PMA is assumed (trend projections).

Las Positas as an Addition to PMA Employment

Without Las Positas, the "Trend Projections" for the PMA indicate annual increases in total employment averaging between 1,500 and 2,000 jobs per year. Extending this rate through 2005 yields a total of between 37,500 and 50,000 new jobs. Added to approximately 39,200 jobs existing in 1980, this yields year 2005 totals of 76,700 to 89,200 jobs. The addition of Las Positas employment--22,200 jobs in 2005 (excluding projection construction employment)--would raise the year 2005 amount to 98,900 to 111,400. Corresponding average increases in total PMA employment would be 2,600 to 3,100 new jobs per year. As indicated, the primary consequences of this new employment relate to traffic, air quality, water supply, and public costs and revenues, which impacts are addressed elsewhere in this DEIR.

Las Positas as a Redistribution of PMA Employment

Under this assumption, two scenarios are apparent: Las Positas office/business/industrial parks would be able to successfully compete with other projects in the PMA in capturing potential market demand for such space; and the converse. The consequences of the first scenario are: a redistribution of potential revenues (property, retail, business taxes, etc.) from the PMA cities and from Contra Costa County to Alameda County (although Alameda County would lose a component of these revenues from projects in the cities "displaced" by Las Positas); a redistribution of traffic within the PMA (although there would be a net Valley-wide reduction compared to the "addition" scenario); and a redistribution of other indirect impacts of commercial/office/industrial development (service requirements, air quality impacts, "secondary" employment impacts, etc.). The consequences of the second scenario are generally the converse of those cited for the first: the loss of potential revenues to the County (and other service providers); and the redistribution of traffic and of service requirements, air quality impacts, etc.

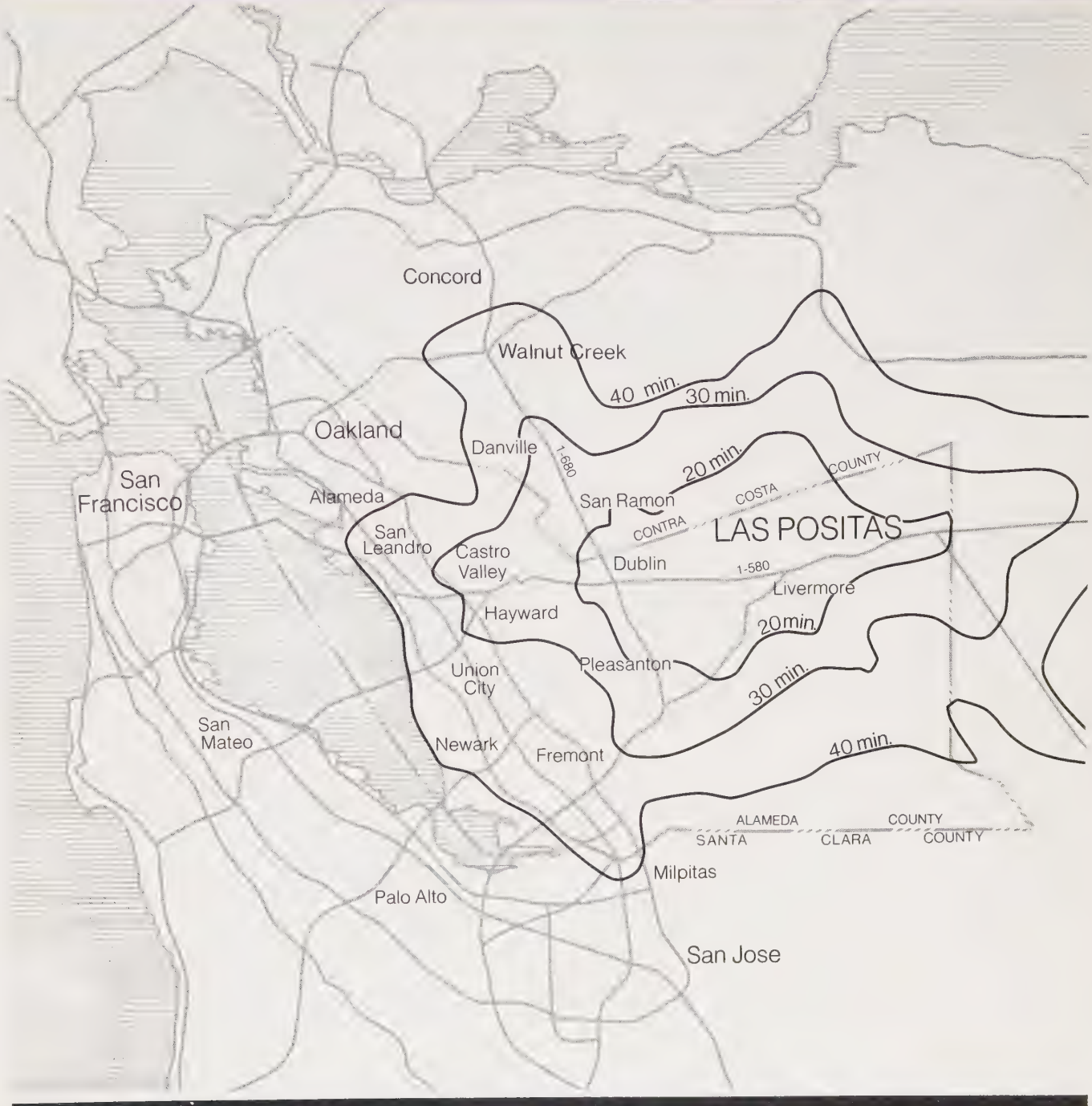


PRIMARY MARKET AREA

FIGURE 5.1

PRIMARY MARKET AREA

SUB-AREA



COMMUTER DRIVING TIMES FROM LAS POSITAS

FIGURE 5.2

6 MILES

NOTE: ASSUMES 25MPH AVERAGE ON ARTERIALS AND COLLECTORS, 45MPH FOR FREEWAYS AND LIMITED ACCESS ROADWAYS FOR PEAK HOUR DRIVING TIMES.

5.2 POPULATION AND HOUSING

Setting

Population

a. Regional Distribution

The distribution of regional population in the nine San Francisco Bay Area counties is shown in Table 5.13. At the time of the 1980 U.S. Census, 83.4 percent of the regional population total of 5,195,100 was concentrated in Alameda, Contra Costa, San Francisco, San Mateo and Santa Clara Counties. With 1,105,400 people, or 21.3 percent of the regional population, Alameda County was the second most populous of the Bay Area counties in 1980.

b. Two-County Distribution

Population growth has been quite different in Alameda and Contra Costa Counties during the 1970's. Alameda's growth has been slow during this period, particularly after the rapid growth in southern Alameda County during the 1960's. Contra Costa County, on the other hand, has had rapid population growth during the 1970's. The majority of this new population growth has occurred in the I-680 corridor. The communities of Concord, Walnut Creek, Danville, San Ramon and Pleasanton all matured during the 1970's as significant residential communities. Table 5.14 shows the historical and projected (ABAG) population in the two counties.

ABAG projections suggest that the counties will grow slightly faster than the region as a whole. ABAG projects that the two counties, with 34% of the present regional population, will account for 35% of population growth by 2000[1/]. However, ABAG's population projections may be conservative. The two-county projections published in January, 1980 were short by over 40,000 people from the 1980 census. The majority of this shortfall (almost 30,000) occurred in Contra Costa County.

c. Population in the Primary Market Area

Alameda County's population growth has been slower than projections of the early 1970's would suggest (1,105,400 in 1980 vs. 1,148,700 "slow growth" alternative[2/], see Table 5.15). The population in the Livermore-Amador Valley grew by 23,500 between 1970 and 1980, or 23.3% over the 10-year period.

1/ABAG, Projections '79 (January, 1980).
2/California Department of Finance, Division of Population Forecasts, 1972.

Although this was a rapid rate of growth, it was also slow by comparison with the early projections.

During the same period, the San Ramon Valley nearly doubled in population from 28,090 in 1970 to 57,400 in 1980[1/].

TABLE 5.13

POPULATION
SAN FRANCISCO BAY AREA COUNTIES
1960, 1970 and 1980

	April 1, 1960[a/]		April 1, 1970[a/]		April 1, 1980[b/]	
	Total Population	Percent Bay Area	Total Population	Percent Bay Area	Total Population	Percent Bay Area
Bay Area	3,638,939	100.0	4,630,073	100.0	5,195,100	100.0
County						
Alameda	908,209	25.0	1,073,184	23.2	1,105,400	21.3
San Francisco	740,316	20.3	715,674	15.5	678,000	13.1
Santa Clara	642,315	17.7	1,064,714	23.0	1,300,000	25.0
San Mateo	444,387	12.2	556,234	12.0	588,900	11.3
Contra Costa	409,030	11.2	558,389	12.1	660,900	12.7
Sonoma	147,375	4.1	204,885	4.4	301,600	5.8
Marin	146,820	4.0	206,038	4.5	222,900	4.3
Solano	134,597	3.7	171,815	3.7	238,300	4.6
Napa	65,890	1.8	79,140	1.7	99,100	1.9

[a]U.S. Bureau of the Census, U.S. Census Population (Washington, D.C.: Bureau of the Census, 1971-2).

[b]California State Department of Finance, Population Research Unit

[1]San Ramon Valley Area General Plan, March 1976

TABLE 5.14

ASSOCIATION OF BAY AREA GOVERNMENTS[1]
PROJECTIONS '79
PROJECTED POPULATION, ALAMEDA AND CONTRA COSTA COUNTIES
1980 - 2000
(Thousands)

Year	Alameda County	Percent Change	Contra Costa County	Percent Change	East Bay Total	Percent Change
1980	1,105.4[2]		660.9		1,766.3	
1985	1,180.5	6.4%	712.7	7.3%	1,893.2	6.7%
1990	1,220.9	3.3%	775.1	8.1%	1,996.0	5.2%
1995	1,262.7	3.3%	818.6	5.3%	2,081.3	4.1%
2000	1,295.9	2.6%	853.5	4.1%	2,149.4	3.2%

1 Association of Bay Area Government's Projections '79, January 1980

2 Census data for April 1, 1980
Sources: U.S. Census Bureau
California Department of Finance
Association of Bay Area Governments

ABAG population projections for the East Bay area are represented in Table 5.14. Table 5.16 presents ABAG projections for the project Primary Market Area.

TABLE 5.15

ASSOCIATION OF BAY AREA GOVERNMENTS PROJECTIONS 79
PROJECTED POPULATION, LAS POSITAS
PRIMARY MARKET AREA

1980 - 2000

Year	San Ramon Valley	Pleasanton/Dublin Area	Livermore Area	PMA Total
1980	56,800	49,900	52,800	159,500
1985	70,200	57,300	57,400	184,900
1990	81,600	60,700	62,400	204,700
1995	85,700	63,900	67,900	217,500
2000	88,700	64,800	74,700	228,200

Source: Association of Bay Area Governments, Projections '79, January 1980.

Housing Supply and Demand - Las Positas Primary Market Area

1. Housing Supply

a. Recent Trends - PMA

Historically, communities in the Livermore, Amador and San Ramon Valleys, the defined project Primary Market Area (PMA), have been predominantly residential, with the majority of employed residents commuting to employment centers elsewhere in the East Bay and the region. Residential growth in the PMA has been rapid since the 1960's. In the Livermore-Amador Valley (Livermore, Pleasanton and Dublin area), the housing supply increased by an average of 1,400 units per year during the 1960's, from 6,864 units in 1960 to 20,877 units in 1970. This rapid rate of residential growth continued through the early part of the 1970's, averaging approximately 1,800 units per year, but declined during the latter part of the 1970's to 590 units per year. By 1980 the housing stock in Livermore, Pleasanton and Dublin had increased to 32,422 units. In the Dublin area, residential development was most rapid during the 1960's, increasing an average of 352 units per year to 3,879 units in 1970. As the area built out, this rate declined to an average of 93 units per year from 1970 to 1976, and to 23 units per year from 1976 to 1980. U.S. and special census data for Livermore and Pleasanton show residential development increasing most rapidly during the latter part of the 1960's and early 1970's. Residential development in

Pleasanton averaged approximately 412 units per year from 1960 to 1970; in Livermore the rate was 638 added units per year. From 1970 to 1975 the rate of growth in Pleasanton averaged 847 units per year; this dropped to an average of 380 units per year from 1975 to 1980. Residential growth in the Livermore area showed a similar trend, averaging 940 units per year from 1970 through 1974 and dropping to 182 units per year from 1975 to 1980.

The significant increases in residential units in the San Ramon Valley area of Contra Costa County occurred primarily during the 1970's. From 1960 to 1970, the area's housing stock grew from 3,702 to 6,958 units, averaging 326 units per year. Between 1970 and 1975 the number of units doubled, to 12,622, with development averaging 1,133 units per year. Development for the remainder of the 1970's averaged 1,395 units per year, to a total of 19,596 housing units in 1980.

b. Projections of Housing Supply - PMA

This analysis draws upon projections contained in ABAG's Projections '79, adopted January 1980 and in the County's "General Plan for the Livermore-Amador Valley Planning Unit", adopted November, 1977. These two documents provide an overview of potential residential development within the PMA reflecting the plans and policies of local governments. The current analysis also refers to adopted plans and related growth management policies of the cities of Livermore and Pleasanton.

The ABAG projections indicate a year 2000 total of approximately 86,900 housing units for the PMA, including 58,500 in the Livermore-Amador Valley area and 28,400 in the San Ramon Valley area. The projected 1995 total is approximately 80,900, with 55,000 in the Livermore-Amador Valley, and 25,900 in the San Ramon Valley. The County General Plan projects approximately 47,400 units in the Livermore-Amador Valley Planning Unit by 1995. Adjusted for possible changes in household sizes, and reflecting adopted growth management policies, this total for the Planning Unit would be approximately 50,000 units in 1995 and, extrapolated to the year 2000, approximately 55,700 units.

The County and city general plans for the Livermore-Amador Valley area reflect a number of assumptions regarding conditions and trends evident during the late 1960's and early 1970's. In particular, limited sewage treatment and disposal capacity available to Dublin, Pleasanton and Livermore areas is reflected in overall limits, and in the case of the cities of Pleasanton and Livermore, long-term rates of residential development. The local jurisdictions are currently considering and/or acting to modify adopted growth management policies. The cities, the Dublin-San Ramon Services District, and Zone 7 of the Alameda County Flood Control and Water Conservation District are also evaluating alternative methods for meeting long-term sewerage requirements of planned (or potential, unplanned) development. It is likely that ongoing review will also be given to appropriate adjustments to local residential development policies in light of current or imminent employment growth. One possible consequence of these several considerations could be adjustment or amendment to local general plans, growth management policies, and related capital improvement programs to provide additional housing to "balance" projected employment levels. This change in local policy is treated in the current DEIR as a possible "Project

Alternative" to the proposed Las Positas development and is addressed in Section 7.0.

The current analysis of project impacts on area employment, housing, and population assumes that the adopted policies of the cities and counties will not be significantly revised and will continue to govern rates and long-term levels of development within the PMA.

ABAG Projections of Housing - PMA

Available ABAG projections of housing supply[1] (occupied housing units) for the Bay region, Alameda and Contra Costa Counties, and for the communities in the project PMA (Livermore, Pleasanton, Dublin, San Ramon Valley) are presented in Table 5.17. As the projections are based on an estimate of existing units in 1975, the projections for 1980 do not necessarily agree with 1980 census figures. The projections indicate the following trends for the East Bay PMA:

- Within the East Bay the rates of increase in housing (as well as employment) are expected to generally parallel trends projected for the region, being relatively rapid during the latter 1970's and gradually slowing toward the end of the century.

- The East Bay's (Contra Costa and Alameda Counties) share of housing and employment is projected to remain relatively constant, or approximately 34 percent of regional housing supply and 39 percent of regional total employment. Within the two counties, the projections indicate some redistribution of both housing and employment. Alameda County's share of the regional housing supply is projected to decline slightly, from 22 percent in 1975 to 21 percent in year 2000; Contra Costa's share of housing is projected to increase from 11 to 13 percent.

- Rates of increase in the housing supply differ between the two counties. The rate of increase in Alameda County is projected to remain relatively constant through the projection period, at between 6 and 8 percent increase for each five year period through 1995, and dropping to five percent increase from 1995 to 2000. The rate of housing increase in Contra Costa County is expected to remain relatively rapid through 1990, at 12 to 15 percent each five year period. This drops to a rate of 6 percent from 1995 to 2000.

- Within the project Primary Market Area, housing growth is expected to be strong through 1985, increasing by 25 percent from 1975 to 1980 and by 26 percent from 1980 to 1985. The rate of change declines to 16 percent from 1985 to 1990, to 10 percent from 1990 to 1995, and to 8 percent from 1995 to 2000. The total projected increase is 46,867, from 40,074 units in 1975 to 86,942 units in 2000. The greatest numerical and percentage increase in housing is expected in the San Ramon Valley area, where a total of 21,916 units are projected to be added, increasing the number of units by 191 percent, from 11,473 in 1975 to 33,389 in 2000. A total of 11,560 units are projected to be added in the Pleasanton-Dublin area, an 84 percent increase

[1] ABAG, Projections 79 (January, 1980).

TABLE 5.16

ABAG PROJECTIONS[1] - OCCUPIED DWELLING UNITS
San Francisco Bay Area, East Bay Area,
Alameda and Contra Costa Counties,
Las Positas Primary Market Area

	1975[2]	1980	1985	1990	1995	2000	Net Change 1975-2000	1980-2000
Bay Region (1,000's)	1,772.8	1,945.1	2,146.1	2,319.1	2,470.4	2,612.2	839.4	658.1
EAST BAY AREA	596,749	655,019	728,594	796,207	851,026	897,475	300,726	242,456
Alameda County	395,021	422,559	457,861	491,649	521,909	548,509	153,488	125,950
Contra Costa County	201,728	232,460	270,733	304,558	329,117	348,966	147,238	116,506
PRIMARY MARKET AREA	40,075	50,670	59,568	73,797	80,869	86,942	46,867	36,272
Livermore-Amador Valley Area	28,602	31,857	34,102	43,560	48,743	53,553	24,951	21,696
Livermore Area	14,813	15,844	14,144	21,110	24,727	28,204	13,391	12,360
Pleasanton-Dublin Area	13,789	16,013	19,958	22,450	24,016	25,349	11,560	9,336
San Ramon Valley Area	11,473	18,813	25,466	30,237	32,126	33,389	21,916	14,576

[1]Projections '79, ABAG, January 1980

[2]Base Year Data

from 13,789 in 1975 to 25,349 in 2000. Approximately 13,391 units are projected to be added in the Livermore area, representing an increase of 90 percent from 14,813 in 1975 to 28,204 in 2000.

- The PMA's share of the regional housing stock is projected to increase only slightly. The PMA's share of total housing in the East Bay also increases slightly.

- From 1975 to 2000, the PMA is projected to receive approximately 6 percent of total housing (occupied) growth in the region and approximately 15 percent of this growth in the East Bay Area. For the 1980-2000 period, the PMA would add approximately 1,800 new units per year, with 1985-1990 projected to be the period of most rapid residential development.

County General Plan Projections - PMA

The 1977 adopted County "Livermore-Amador Valley Planning Unit General Plan" contains, as a measure of impacts of County and city land use proposals, an estimate of projected residential holding capacity extended through the 1975 to 1995 plan period. The Plan estimates indicate the following:

- Total housing units are projected to increase to 47,440 in 1995. Of this, 23,270 would be in the Livermore planning area; 33,140 in the Pleasanton-Dublin area (Pleasanton - 15,670; Dublin - 6,470); 1,550 would be in the "Northbluff" project area; and approximately 440 would be located in the rural Sunol-Kilkare area.

By way of comparison, the ABAG projections for year 1995 indicate a total of 48,743 units for the Planning Unit, including 24,727 in the Livermore area and 24,016 in the Pleasanton-Dublin area.

Projections Based on Local Growth Management Policies - PMA

Growth management policies in the cities of Livermore and Pleasanton relate annual increases in housing to acceptable rates of change in population and/or to long-term plan population goals and projections. The allocations are sensitive to changes or projected changes in the size of households; given fixed population goals, the number of units will increase as household sizes decrease. Table 5.18 presents an estimate of potential residential development adjusted to such possible changes in household sizes. These adjustments would result in a projected 1995 housing supply of approximately 50,000 units in the Livermore-Amador Valley Planning Units, as compared to the adopted County Plan's estimate of 47,440 units.

City of Pleasanton

The 1996 "target" population for the City of Pleasanton is approximately 48,700; it is assumed that this population would result from a two percent annual increase in population beginning in 1976. The City's ultimate Plan population is given as 76,000; this level is not linked to any specific date. It is expected that

the target population for 1996 would be housed in approximately 16,500 units, or approximately 4,840 added to the 11,660 existing units in 1980. This level would provide for a population of 48,700, assuming an average 1996 household size of approximately 2.95 persons per housing unit. The current 1980 average household size in Pleasanton is 3.2 persons. The current DEIR analysis assumes that units would be added at a rate of 303 per year; this would result in an additional 4,850 units by 1996 and, through extrapolation, 6,060 additional units by year 2000.

City of Livermore

The City of Livermore's growth management policy is, like Pleasanton's, governed primarily by population change. The City's long-term population level is approximately 82,000, to be reached through an average two percent annual increase. In the current analysis it is assumed that this population level would be achieved by year 2000. It is further assumed that:

- The average year 2000 household size for the Livermore area will be approximately 2.75 persons, such that year 2000 units in the area would total approximately 29,800.

- The net increase, 1980 to 2000, would be approximately 11,900 units, from 17,890 in 1980 to 29,800 in 2000. These would be added at a rate of approximately 596 units per year.

The recent Livermore Sphere of Influence study sets the holding capacity in the adopted Livermore Sphere of Influence at an additional 7,700 units, less than the estimated 11,900 additional units based on Plan proposals for a city planning area which is larger than the adopted sphere. This lower figure is included as an alternative year 2000 residential level for the city Assuming no change in the assumed growth rate (596 units per year), this lower level would be achieved in 1995.

Table 5.18 summarizes current assumptions regarding the possible effects of local plans and growth management policies on the projected housing supply in the Livermore-Amador Valley, incorporating adjustments for projected changes in household sizes. The table also includes the current ABAG projections of housing for the San Ramon Valley area; these are not adjusted, although 1980 (census) housing units are included in place of ABAG's projection for that year. County General Plan estimates of projected housing for Dublin are included without change; it is assumed that this level would be achieved by 2000. Development in the unincorporated Northbluff area (1,750 units) is assumed to be completed by 1995.

In the current analysis, it will be assumed that the housing supply within the project PMA will total approximately 82,000 units by 1995 and approximately 87,000 units by 2000.[1] The latter is very close to the current ABAG projection (86,992 in 2000). The 1995 estimate is slightly more than ABAG's projection (80,869). The projected increase in units, 1980 to 1995, would equal approximately 28,700 units; the projected increase between 1980 and 2000 would total approximately 33,700 units.

[1] A range is indicated in Table 5.18 for both projection dates. The figures used in the analysis represent an approximate mid-point.

TABLE 5.17

PROJECTED HOUSING SUPPLY IN THE LAS POSITAS PRIMARY MARKET AREA BASED ON LOCAL PLANS AND ADOPTED GROWTH MANAGEMENT POLICIES

	Housing Units[5,6]					Net Change 1980-2000
	1980[1]	1985	1990	1995	2000	
Livermore-Amador Valley	33,680	39,650	45,590	50,680 47,440	55,740 51,530	22,060 17,850
Livermore Area[2]	17,890	20,870	23,850	26,830 25,590[2]	29,800 25,590[2]	11,910[2] 7,700[3]
Pleasanton Area	11,660	13,180	14,690	16,210	17,720	6,060
Dublin	4,130	4,720	5,300	5,890	6,470	2,340
Northbluff	---	880	1,750	1,750	1,750	1,750
San Ramon Valley Area[4]	19,600	25,500	30,240	32,130	33,390	13,790
TOTAL - PMA	53,280	65,150	75,830	82,810 81,570	89,130 84,920	35,850 31,640

Average Annual Change in Housing Units [6]

	1980-85	1985-90	1990-95	1995-2000	1980-2000
PMA - Total	2,370	2,140	1,400 1,150	1,260 670	1,790 1,580

1 1980 census figures rounded to nearest 10. ABAG total occupied units projected for 1980 is 50,670 in the PMA.
2 Full buildout per adopted City of Livermore General Plan.
3 Buildout within adopted Livermore Sphere of Influence.
4 1980 is U.S. Census. 1985-2000 are ABAG projections.
5 Total occupied and unoccupied.
6 Rounded to nearest 10.

JOBS/HOUSING RELATIONSHIPS

Current Conditions

The Livermore-Amador and San Ramon valleys may be considered "net-exporters" of labor insofar as the total number of employed residents, estimated at 33,800[1] in 1975 and 66,800[2] in 1980, greatly exceeds the number of local job opportunities, 25,400[1] in 1975 and an estimated 39,200[3] in 1980. This net imbalance would result in amounts of out-commuting greater than current levels were it not for the fact that a substantial number and proportion of local jobs are held by local residents. A recent survey[4] indicates that perhaps 80 percent or more of all local jobs are held by local residents, or approximately 31,400 of 39,200 local jobs. While high, this finding appears to be consistent with other results of the survey which indicate that only slightly less than half of PMA employed residents work within the valleys (an estimated 31,900[5] workers) and slightly more than half commute to jobs outside the valleys.

Projected Conditions

The effects on PMA communities of local and regional changes in employment growth cannot be narrowly defined or quantified at this time--as "housing demand" for example--due to uncertanties regarding a number of variables. As indicated below, changes in these assumptions result in a very broad range of "demand".

PMA residents currently hold approximately 2.8 percent of all jobs in the region. If this rate of participation were to be applied to future as well as existing residents, it is estimated that a "demand" for an additional 23,800 new housing units from 1980 to 2000 would result within the PMA. This quantity is less than that which would be provided under local plans and growth management policies.

The shift in employment growth to the Livermore-Amador-San Ramon Valleys could also affect local housing demand. Potential employment growth which could result from the completion of a significant number of announced and identified commercial and industrial projects in the PMA is reviewed in Section 5.1. Net increases of between 86,100 and 99,100 new jobs, 1980-2000, were indicated, although it is noted that these levels are very high and would not be consistent with current (ABAG Preliminary) projections of employment growth for the region and the East Bay. If, however, all of the announced/identified projects were completed, there could be a corresponding maximum housing demand within the PMA for approximately 58,700 new units. This assumes an average of 1.35 employed persons per housing unit. It assumes that 80 percent of persons working in the PMA projects would seek housing within the PMA. Adjustment in these and other assumptions would modify these results--typically

1 Association of Bay Area Governments Draft Projections 79, April 1979.
2 Estimate by Alameda County Planning Department. The amount is equal to 80 percent of all persons 16 and over who worked in 1979 by Sex by Usual Hours Worked by Weeks Worked in 1979, in 1980 Census Area Profiles, Summary Tape File 3A (STF 3A).
3 Estimate by the Doane Organization, 1980.
4 Gruen Gruen + Associates, A Survey Analysis of the Employment, Demographic and Housing Characteristics of the Hacienda Business Park Labor Pool, October, 1982.
5 Estimate by Alameda County Planning Department.

downward. For example, improvements in job opportunities within the PMA could allow higher rates of job participation among households living in both existing and new housing units. Further, the portion of new job force choosing to live within the PMA may be substantially less than 80 percent. Assuming 1.8 workers per household (which is currently typical of some other high employment areas in the region) and assuming that only half of the work force would choose to live in the PMA, the housing demand would be reduced to approximately 27,000 units.

Local employment growth under the "Trend" projections identified in Section 5.1 (30,000 to 40,000 jobs added, 1980-2000) could result in a maximum demand for approximately 23,700 new units in the PMA. This assumes that 80 percent of the local jobs would be held by persons choosing to live in the PMA and that the average number of employed persons per household would be 1.35. This component of demand is less than the projected housing supply; and if fully accommodated, would leave between 7,800 and 12,000 projected new units available to serve housing demand generated by employment growth elsewhere in the region. The ability to meet the regional (outside the PMA) component of housing demand improves if higher rates of labor force participation or lower rates of local housing demand by local workers are assumed.

Housing Need and Affordability

Existing Conditions and Trends

Special censuses, as taken from 1974 to 1976 in the Alameda County portions of the PMA, indicated that approximately 40 percent of the principal wage earners were professional, technical workers, managers and officials. This is by far the largest occupational group in the PMA. The predominant occupations of the secondary wage earner were clerical (30%) and professional/technical (18%). New employment opportunities expected in the PMA are for these same types of jobs. A typical example is the proposed Hacienda Business Park[1] in Pleasanton, which expects to have as its core of employees a number of engineers, specialized scientists, and technicians usually engaged by research and development establishments. Additionally, clerical workers and other white collar support professionals would be employed. It is concluded, therefore, that the incomes of the new persons employed in the PMA will be similar to or greater than the incomes of persons already living there, especially if the trend of increasing workers per household continues.

Average household incomes for Alameda County are shown on Table 5.19. Income categories, defined by HUD, are moderate (81 -120% of median), low (51 - 80% of median) and very low (50% of median). The average household income for the PMA was approximately $25,290 in 1981. Estimated average incomes for Livermore, Plesanton, Dublin and San Ramon was $24,851, $28,151, $25,403, and $29,630 respectively[1]. These figures suggest that the PMA has a higher overall household income than the Alameda County average. These figures are based on an assumption of approximately 1.17 workers per household.

[1]O.C. Achinivu, "An Appraisal of the Labor Supply for the Proposed Hacienda Business Park", March 1982.

TABLE 5.18

HOUSEHOLD INCOME CATEGORIES FOR ALAMEDA COUNTY 1981 - 1982

Persons Per Household	Median	Moderate	Low	Very Low
1	$21,250	$25,500	$17,000	$10,650
2	24,400	29,300	19,500	12,200
3	27,450	32,950	21,950	13,750
4	30,500	36,600	24,400	15,250
Average - 2.5	$25,925	$31,110	$20,740	$12,962

Source: HUD Community Planning Division, December, 1981

Under Section 65584 of the State Government Code, each local council of government is required to determine existing and projected housing needs for its region. A Housing Needs Report was approved recently by the ABAG Executive Board for purposes of official review. Tables 5.20, 5.21, 5.22 and 5.23[1] present the ABAG projections for Alameda and Contra Costa Counties. The projected needs are allocated among the cities and unincorporated remainder; there is no further disaggregation to the unincorporated communities and areas.

On March 30, 1982 the County of Alameda Board of Supervisors, having reviewed the projections, accepted the estimated share of the regional housing need for the Alameda County Unincorporated Area (4,991) "as a low figure . . " and approved instead, "a high figure, not contained in the ABAG Report (10,000) . . .". The Board did not accept the 1985 Projected Housing Need Income Distribution contained in the Needs Report; instead it accepted, for the Unincorporated Area, "the income distribution contained in the Alameda County Housing Element." This Housing Element allocation indicates 56.3% above moderate income, 10.9% moderate income, 16.0% low income, and 16.8% very low income for additional households 1980 to 1985.

[1]Projected Housing Need:
Housing Needs Report, San Francisco Bay Area, ABAG, as approved by the Executive Board for Local Government Review, December 1981
Income Distribution: Housing Needs Assessment Tech Memo 2, ABAG, March 18, 1982

TABLE 5.19

PROJECTED HOUSING NEED, 1985
ALAMEDA COUNTY

City	1985 Projected Households	Total Available Housing Needed in 1985	1980-85 Projected Increase In Housing Needed
Alameda	30,016	31,314	3,724
Albany	7,688	7,834	848
Berkeley	45,100	47,588	1,639
Emeryville	2,149	2,421	21
Fremont	52,235	53,961	8,565
Hayward	39,478	41,064	5,287
Livermore	18,586	19,073	2,525
Newark	10,953	11,264	1,804
Oakland	145,160	154,966	3,984
Piedmont	3,812	3,884	62
Pleasanton	14,105	14,426	2,871
San Leandro	27,997	28,865	863
Union City	13,911	14,299	2,028
Unincorporated	50,499	52,174	4,991
TOTAL	461,689	481,505	39,212

Source: ABAG, 1981

TABLE 5.20

PROJECTED HOUSING NEEDS, 1985
CONTRA COSTA COUNTY

City	1985 Projected Households	Total Available Housing Needed in 1985	1980-85 Projected Increase In Housing Needed
Antioch	19,839	20,702	4,829
Brentwood	2,565	2,624	1,073
Clayton	2,231	2,310	940
Concord	41,227	42,619	3,281
El Cerrito	9,856	10,121	295
Hercules	3,902	4,112	2,269
Lafayette	8,033	8,291	230
Martinez	10,458	10,887	2,123
Moraga	6,064	6,234	1,255
Pinole	5,171	5,397	340
Pittsburg	13,499	14,319	2,499
Pleasant Hill	10,869	11,274	1,154
Richmond	30,313	31,545	2,616
San Pablo	9,332	9,811	1,489
Walnut Creek	25,611	26,578	2,331
Unincorporated	82,647	86,392	16,032
TOTAL	281,617	293,216	42,756

Source: ABAG, 1981

TABLE 5.21

INCOME GROUP PROPORTIONS FOR
ALAMEDA COUNTY HOUSING NEEDS

Jurisdiction	% Above Moderate Income	% Moderate Income	% Low Income	% Very Low Income
County	45	15	13	27
Alameda	44	15	14	27
Albany	43	15	14	28
Berkeley	40	16	14	30
Emeryville	28	18	17	37
Fremont	51	14	11	24
Hayward	44	15	13	28
Livermore	50	14	12	24
Newark	53	13	11	23
Oakland	39	17	14	30
Piedmont	75	3	0	22
Pleasanton	56	13	9	22
San Leandro	47	15	12	26
Union City	49	14	12	25

Percentages should be applied to 1980-85 projected housing need to satisfy requirement of state law to seek to avoid further impaction of communities with relatively high proportions of lower income households.

Source: ABAG, 1981

TABLE 5.22

INCOME GROUP PROPORTIONS FOR
CONTRA COSTA COUNTY HOUSING NEEDS

Jurisdiction	% Above Moderate Income	% Moderate Income	% Low Income	% Very Low Income
County	53	13	11	23
Antioch	49	14	12	25
Brentwood	47	14	13	26
Clayton	63	10	8	19
Concord	50	13	12	25
El Cerrito	54	13	10	23
Hercules	63	11	7	19
Lafayette	65	10	6	19
Martinez	50	14	12	24
Moraga	65	10	6	19
Pinole	54	12	11	23
Pittsburg	43	16	13	28
Pleasant Hill	51	13	12	24
Richmond	42	15	14	29
San Pablo	40	16	14	30
Walnut Creek	56	12	10	22

Percentages should be applied to 1980-85 projected housing need to satisfy requirement of state law to seek to avoid further impaction of communities with relatively high proportions of lower income households.

Source: ABAG, 1981

The ABAG projected housing need for Livermore and Pleasanton is similar to the need for Alameda County as a whole. Over 65 percent of the new housing requirement in 1985 is for households at or above the moderate income level.

Impacts

Housing Supply

Table 5.23 presents a summary of proposed Las Positas phasing, given in five year increments beginning in 1985 and continuing through 2005. Approximately 4,500 dwelling units are expected to be developed during each phase, accommodating approximately 11,300 additional people per phase. Assuming an average of 1.35 employed persons in each household, approximately 6,000 additional employed persons would reside in the project area in each phase.

The proposed project would provide housing for approximately 18,000 households at buildout (year 2005). The corresponding number of employed residents, again assuming 1.35 persons per household, would be approximately 24,300, and would be slightly in excess of available jobs within the project, estimated to total approximately 22,200.

TABLE 5.23
SUMMARY OF LAS POSITAS PHASING PROGRAM

Phase	DU's	Population	Average Density (DU/Acre)	Employed* Persons	Jobs in Las Positas
I (1985-1990)	4,470	11,699	7.1	6,035	3,207
II (1990-1995)	4,509	11,443	8.5	6,087	4,187
III (1995-2000)	4,502	11,243	8.6	6,078	5,833
IV (2000-2005)	4,519	11,003	8.4	6,101	8,968
TOTAL	18,000	45,388	8.1	24,301	22,195

*1.35 x DU

Source: Wilsey & Ham

While the current analysis includes no detailed projection of housing needs of employees in terms of types, sizes, tenure, etc., it would be reasonable to assume that the proposed development, given its size, the proposed mix of housing types and densities, and the high proportion of attached units (approximately 50 percent of total proposed) would meet a greater proportion of need than other communities in the PMA in which single family detached units are and would remain the predominant housing type (e.g., the adopted General

Plan for the Livermore-Amador Valley Planning Unit projects that approximately 85 percent of total units, 1995 would be single family detached units).

Impacts of the proposed project on overall housing supply and demand within the Primary Market Area would be of two kinds. First, the additional employment provided in the proposal could result in an increase in the demand for housing within the PMA. By year 2000, it is proposed that the project include a total of approximately 13,300 jobs (this would increase to a total of 22,200 in 2005). Assuming an average of 1.35 employed persons per household, this year 2000 level of employment would result in a corresponding demand for approximately 9,990 new housing units.

The project would also add to the available supply of housing within the PMA. Under proposed phasing, approximately 13,500 units would be completed by 2000 (of 18,000 total). This would increase the overall projected supply of new housing in the PMA by approximately 40 percent, from between 32,000 and 36,000 units to 45,500 - 49,500.

Under the Local Policies projection of housing and "Trend" projections of employment for the Primary Market Area, without Las Positas, the ratio of local jobs to local housing would be approximately .85 to 1 (approximately 74,000 jobs and 86,000 housing units). There would probably be no demand for housing, generated by local or regional employment growth, in excess of projected housing supplies. With the addition, by year 2000, of 13,500 housing units and 13,300 jobs in the proposed Las Positas development, the jobs/housing ratio for the PMA would not change significantly from that projected without Las Positas (to .87 from .85 jobs per unit). It is not expected that the combined addition of jobs and housing, per the Las Positas proposal, would substantially alter the relationship between "demand" and supplies projected without the project.

At buildout in 2005, the proposed development would provide employment for approximately 22,200 persons, an increase of 67 percent over that proposed for 2000. From 2000 to 2005, the number of housing units in the project area would also increase, by 33 percent, to a total of 18,000. The relationship of the project to the remainder of the PMA in 2005 is difficult to evaluate due to the lack of projections for these other areas beyond year 2000. For purposes of the current analysis, a straight-line extrapolation of 1980-2000 employment and housing trends is assumed.

- Housing units (excluding Las Positas) would total 42,100 added 1980 to 2005 (1,685 per year).

- Jobs in the PMA (excluding Las Positas) would total 37,500 to 50,000 added 1980 to 2005 (1,000 to 2,000 per year).

- Projected housing supply in the PMA (excluding Las Positas) would total approximately 94,400 units by 2005.

- Projected jobs (excluding Las Positas) would total approximately 77,500 jobs by 2005.

The addition to these of approximately 22,200 jobs and 18,000 housing units in the proposed Las Positas development would, again, not significantly change the projected jobs/housing ratio without the project.

Assessments for the years 2000 and 2005, above, treat both projected housing and projected jobs in the Las Positas development as full additions to other projected housing and employment growth in the PMA. The addition of the total 18,000 units in the proposed development is reasonable, However, it is probable that the project would result in a shift in employment growth--from other employment areas to Las Positas (or the converse) rather than in a net addition of the total 22,200 jobs. Projected employment for the PMA, including Las Positas, would, therefore, be less than the sums indicated as would the corresponding ratio of jobs to housing.

Housing Need and Affordability

Table 5.24 indicates the sponsor's anticipated housing costs by housing type for the Las Positas project. All costs are in 1981 dollars. The average cost of all detached and cluster housing is shown as $106,000 per unit, while the average cost of all multiple family housing is $88,200 per unit. The average cost of all housing is anticipated at approximately $97,000 per unit. These average costs would be lower than Alameda County 1980 averages because average lot sizes in Las Positas are small, anticipated units are expected to be small, and the project program calls for approximately 7 percent of all housing to be manufactured housing.

TABLE 5.24
ANTICIPATED LAS POSITAS HOUSING PROGRAM
1981 DOLLARS

Housing Type/ Density	Units No.	Units %	Avg. Price Sq. Ft.	Avg. Unit Size	Avg. Sales Price/Unit
Detached 2 du/acre	812	5%	$75	2,200 sq. ft.	$165,000
Detached 4.5 du/acre	1,779	10%	$75	1,600 sq. ft.	$120,000
Detached/7 du/acre Cluster	5,009	27%	$70	1,500 sq. ft.	$105,000
Manufactured	1,200	7%	$40	1,250 sq. ft.	$ 50,000
Townhouse 15 du/acre	4,680	26%	$75	1,250 sq. ft.	$ 93,750
Condo/Apartments 20 du/acre	4,500	25%	$75	1,100 sq. ft.	$ 82,500

Source: Wilsey & Ham

Based on anticipated sales prices indicated by project sponsors, approximately 15,400 units, or 85 percent of the total, would be affordable to moderate and low income households. Of these, approximately 1,200 units (7 percent of total) are proposed as manufactured housing with estimated average sales prices of $50,000. As little housing provided through the private market is able to supply

units costing less than this, it is not expected that the need for housing of very low income groups would be met by private developments within the project. It is anticipated that some multi-family housing will be built for rent; this could be made available to low and very low income households if federal and state housing subsidies are available.

5.3 PUBLIC PLANS AND POLICIES

Local Agency Formation Commission (LAFC)

Setting

Each county Local Agency Formation Commission is responsible for determining responsibilities for provision of services to future development. Each has authority to approve, disapprove and amend proposals of annexation, incorporation and disincorporation of cities, and of the formation and amendment of special districts. The Alameda County Local Agency Formation Commission will ultimately act to approve or disapprove elements of the current Las Positas application pertaining to service responsibilities, and in particular, the proposal for formation of a County Service Area to fund a number of essential public services and utilities to the project.

LAFC's are authorized to delineate "spheres of influence" for cities and districts as a basis for determining responsibilities for providing services to future development. The Alameda County LAFC has the following as its objectives in determining spheres of influence for local service agencies in the County:

- o Ensure orderly, compact urban development in areas adjacent to the city, community or district
- o Plan for logical units of local government that will provide citizen services in the most economical fashion
- o Promote cooperative planning among cities, the county, and districts
- o Avoid unnecessary service duplication
- o Help property owners to plan ultimate areas within a planned government structure.

It is the general policy of Alameda County LAFC, subject to reasonable exceptions, that all urban development be municipal development. Its priorities for approving annexation to existing, or formation of new, governmental entities are the following:

- o Annexation to a city, rather than a special district, if both can provide the same services at approximately the same environmental impact;
- o Annexation to a district or a city rather than formation of a new special district or city; and last
- o Formation of a new political entity. Whenever a new political or taxing entity is indicated, the formation of a self-governing special district is the least desirable.

The proposed Las Positas project area is not currently within a designated sphere of influence although the Commission has considered a proposal by the City of Livermore to include the area within the City sphere. This request was denied in LAFC Resolution No. 81-43, adopted November 19, 1981, based on the following findings:

- o The City of Livermore has an adequate existing sphere of influence to accommodate anticipated growth under current City development policies;

- o The provision of public services to unincorporated areas north of I-580 will be the responsibility of Alameda County, subject to review by LAFC;

- o Developments in unincorporated areas will be required to show an economic independence where existing agencies will be providing services; and

- o The status of agricultural preserve contracts will be a consideration in allowing the provision of services by governmental agencies other than the City.

Impacts and Mitigation

LAFC approval would be required to form a CSA for the proposed Las Positas project. The County of Alameda's policies also require conceptual approval for a CSA as a basis for Plan amendment. At its May 21, 1981 hearing, LAFC agreed that it is not opposed to the concept of a CSA for the Las Positas development.

LAFC priorities indicate that the proposal to serve the proposed Las Positas development with a combination of existing service districts and a new CSA would be less acceptable or appropriate than annexation to a city or existing special district. These priorities, however, would appear to be qualified by the November, 1981 Resolution No.81-43, which excludes the project area from the City of Livermore sphere of influence, identifies the County as the agency with primary responsibilities for provision of public services to the subject area, and requires demonstration of economic independence where several existing agencies are providing services; and by LAFC motion of May 21, 1981 approving the concept of using a CSA for the Las Positas development under appropriate circumstances.

The current services proposal for the project identifies the County as having principal responsibility for management of those public services and utilities not provided by an existing public entity. The proposed CSA would be used in conjunction with other internal funding mechanisms (e.g., property transfer fees, development fees, user fees) to provide major project capital, operating and maintenance costs. Fiscal impacts are evaluated in Section 5.8 of this DEIR. Issues pertaining to agricultural preserve contracts within the project area are addressed in a following subsection. Services proposals for the project would be only partially consistent with LAFC objectives:

- o Orderly, compact urban development adjacent to existing development

  The proposal would ultimately become a physical extension of existing urban uses in the Springtown area of Livermore. Initial phases of project development, however, would be physically isolated from this and other existing urban areas.

- o Logical units of local government providing services in most economical fashion

  As indicated, the project would result in a number of inefficiencies in the use

of existing facilities and services provided by the City. Additional fiscal analysis would be required to determine whether the proposed financial and administrative program for the project would result in greater or lesser economies than would result through annexation to the City of Livermore.

- o Cooperative planning

  The proposed development would not be consistent with the City's long term development plans for the Las Positas Valley.

- o Unnecessary service duplication (see above)

Alameda County Planning

Setting, Impacts and Mitigation

The major body of County General Plan policies and proposals applicable to the project area is contained in the Livermore-Amador Valley Planning Unit General Plan, adopted by the Alameda County Board of Supervisors November 3, 1977.

The Plan indicates the County's formal intentions and objectives regarding development and conservation in the Planning Unit for an approximately 20 year period, extending to around 1995. It incorporates city (Livermore and Pleasanton) urban and open space land use proposals for their respective planning areas where these proposals fall within the County's Plan timeframe. The Plan, for the most part, encourages municipal development, wherein the cities will assume principal responsibility both for the regulation of land uses and for the provision of services and facilities to new and existing urban development. The County General Plan diagram designates almost all of the subject project site as Agricultural, allowing for either intensive or extensive agricultural activities, and other compatible open space uses such as range watershed management. The site of the existing FCC monitoring station is designated as a Major Public land use. The campus of Chabot Junior College, to the west of the project site, is similarly designated as Major Public, while the Northbluff site farther to the west is shown for Low and Suburban Density Residential Uses. The Springtown area (City of Livermore) to the east of the project site is designated for Low Density Residential Use. Lands to the south of the project site but north of I-580 freeway are shown for Agricultural Use.

The urban residential, commercial, office, industrial and public uses called for in the Las Positas proposal are not consistent with the adopted Plan diagram. Consistency could be achieved through Plan amendment if the County Planning Commission and Board of Supervisors determine, based on evidence received during the current Plan amendment consideration procedures, that:

- o The proposed amendment would result in significant social, economic, fiscal, and/or environmental benefits which otherwise could not be achieved under the adopted General Plan proposals or policies;

- o The proposed change in the Plan land use designation, and/or to applicable written policies, is warranted by changes in social, economic, fiscal, or environmental conditions, and these changes are not adequately anticipated in or addressed by the adopted General Plan; and

- o There is a demonstrated need in the short term, and/or within the twenty year plan period for the proposed uses above that currently provided under adopted policies and proposals, and the project (in terms of its location, provision for services and facilities, etc.) offers distinct advantages in providing for this need.

Materials contained in the current DEIR, as well as materials received during the public hearings will be reviewed by the Planning Commission and Board of Supervisors in order to establish whether these findings can or cannot be made for the proposed amendment.

The proposed development must be determined to be consistent with both the Plan land use diagram (which, pursuant to compliance with the required findings, would be achieved through amendment to the diagram), and with the written policy statements of the Plan. These applicable objectives, from the Livermore-Amador Valley Planning Unit General Plan, are identified below with project impacts, in terms of relative consistency or inconsistency indicated.

1a. Urban Growth Rate and Amount: To phase uban development so that growth will occur in an orderly manner and community services can be provided efficiently.

Impact

The proposal calls for phasing of development within the project area to correspond to incremental expansions of public infrastructure. The change in General Plan policy to permit establishment of separate service entities to serve project area development would result in potential inefficient use of existing City of Livermore utilities and facilities to the extent that these have been sized in anticipation of serving growth in the project area consistent with the city's long-term general plan. Inefficiencies would also result due to duplication of governmental and service functions. The proposal may have beneficial effects to the extent that the County, the project sponsors and individual property owners and developers can effectively coordinate ongoing development of land uses and installation of infrastructure.

1b. Urban Growth Not to Exceed Capability to Provide Services: To limit the rate and amount of development in the (Livermore-Amador Valley Planning Unit) so that urban growth will not exceed the community's capability to provide services.

Impact

See 1a above. Proposed project may result in service demands, for transportation facilities (e.g., highway capacity), in excess of existing capacities and capabilities.

1c. Guide Growth: To prevent further deterioration of air quality in the Planning Unit by placing limitations on the rate and amount of urban growth.

Impact

The project would adversely impact air quality in the Planning Unit insofar as it would exceed both the rates and amount of urban growth currently provided for in the General Plan, which policy rates and amounts were closely linked to minimizing impacts of growth on Valley air quality.

1d. Balance Business and Residential Development: To achieve better balance between commercial and industrial uses and residential development through the allocation of scarce community resources, such as sewage treatment capacity.

Impact

The project would not directly impact achievement of this objective within existing communities in the Valley. Capacity in infrastructure within the project would be determined based on phased and ultimate requirements of land uses which have been determined based on the objective of achieving balance.

2a. Within the context of LAFC policies for two Valley Spheres of Influence, promote the three existing Planning Unit communities as centers of future urban development.

Impact

The proposal for an independent community would not be consistent with LAFC policy in effect at the time of Plan adoption (November, 1977).

2b. Promote Filling-In and Contiguous Development: To promote the filling-in of areas where the development pattern is fragmented and encourage development contiguous to established urban areas in order to consolidate urbanization and efficiently provide urban services.

Impact

It is not known whether the proposed project would directly or indirectly affect the achievement of compact consolidated urban patterns within the existing communities in the Valley. This could result to the extent that the project diverts growth from these communities. Within the project, development would be phased to allow for orderly expansion of urban development. To the extent that individual property owners within the project area may choose, or not choose, to develop their properties at the time and in the sequence proposed, or for that matter, to the uses called for in the proposed Plan, discontinuities in the phasing of and the pattern of development could result.

2c. Provide for Various Types of Living Environments:

No impact.

2d. Provide Areas for Residential Recreational Use:

No impact.

2e. Limit Residential Development in Rural Areas:

No impact.

2f. Limit Development in Hazardous Areas:

See Section 4.3.

2g. Limit Development in Resource Areas:

See Section 4.2.

2h. Provide and Protect Recreational, Historic and Scenic Areas:

See Sections 5.3 and 5.7.

2i. Preserve Habitats of Rare or Endangered Species:

See Section 4.2.

2j. Ensure Mutually Compatible Land Uses:

See Sections 5.3 and 5.12.

3a. Urban Development in Incorporated Areas: All urban development shall be within incorporated areas in order to promote the coordination of land use planning and provision of public services.

Impact

The proposed development would remain in the unincorporated County with land use planning regulated by Alameda County and services provided by existing service entities (e.g., recreation) through newly established functions of existing entities (e.g., sewer by the County Public Works Agency) or by new service entities. Coordination of land use planning and provision of public services could be achieved through specific provisions of the General Plan Amendment, through provisions of the conceptual Planned Development zoning applied to the project area, or through other mechanisms to be applied during planning and implementation stages of the project.

Mitigation

Inconsistency with policy requirements that development be within incorporated areas can only be mitigated if: 1) the County requires that the project develop through annexation to the City of Livermore or through incorporation into a new city; or 2) the County amends the subject Plan policy to permit same.

3b. To discourage the establishment of special districts that provide public services to urban development and do not have the authority to plan land use in order to discourage sprawl, fragmented development, and fragmented governmental control of services and planning.

Impact

The project calls for the establishment of a County Service Area, and for the extension of service responsibilities of a number of existing service entities. These provisions would not be fully consistent with the plan policy. The project would, if implemented as proposed, be consistent with the policy to the extent that it would result in coordination of planning and service functions under the County through use of the Planned Development District and to the extent that the County, in conjunction with the developers of the project, can ensure that provisions of the project relating to coordination of development with provision and extension of facilities, utilities and services can be ensured.

4a. Air Quality: To guide the rate, amount and location of development to ensure that air quality is improved to and maintained at state standards.

Impact

The project would result in significant increases in emissions due to increases in traffic levels in the basin. The project may have a neutral impact in that it provides an internal balance of employment and housing opportunities and improves housing opportunities in the Valley.

5a. To guide the type and amount of development to ensure that water demand does not exceed supply and that adequate yields can be sustained.

Impact

See Section 5.6.

5b. To promote those types of construction and land use patterns which minimize water consumption.

Impact

See Section 5.6.

5c. To preserve and protect groundwater recharge areas of highly permeable soils, groundwater basins, and watersheds of reservoirs from contamination, destructive activities, and incompatible land uses.

Impact

See Section 4.4.

6. Environmental Hazards:

Impacts

See Section 4.3 and 4.4.

7. Housing:

7a. To maintain and improve housing quality throughout inspection, neighborhood programs, rehabilitation projects, a supportive tax structure, and financial assistance.

Impact

The new development would have no significant direct impacts on housing within urban areas. Some of the existing farmhouses within the project area would be removed to be replaced by new residential, commercial and industrial uses. Indirect impacts of the new development on existing urbanized areas (such as diversion of available private and public funding) are not readily quantified.

7b. To promote low and moderate cost housing through allocation of scarce facilities and resources, such as sewage capacity, and through financial assistance.

Impact

As proposed, approximately 7 percent of project housing would be affordable by low income households. Approximately 35% would be affordable by moderate income households.

7c. To encourage a choice of housing type by provision of multiple family housing.

Impact

One half of the housing planned for the project would be attached. A broad range of housing densities (from two dwelling units per acre to 20 units per acre) is proposed.

7d. To provide for ethnic and economic integration of neighborhoods and communities through use of state and federal assistance programs, and by mixing the type and cost of housing in new subdivisions, planned unit developments, and apartment complexes.

Impact

Not applicable.

7e. To promote in each community a balance of residential and business development both to provide personal income and governmental revenues and to reduce energy, environmental and transportation costs.

Impact

The project would include residential, industrial, office and shopping commercial uses.

7f. To locate housing convenient to places of employment and shopping by public transportation.

See project description.

7g. Promote Conservation in Housing: To promote housing which conserves energy and resources, including fossil fuels, water and land through building code, subdivision and zoning restrictions.

Impact

The relatively higher average density of the project residential uses (7.8 housing units per acre), and the higher proportion of attached units will permit greater energy conservation than a lower density project.

County objectives pertaining to the provision of housing within the county and within unincorporated communities and planning areas are contained in the Housing Element of the Alameda County General Plan, adopted by the Board of Supervisors, February 7, 1980. Amendment to plan proposals and policies for the subject Las Positas area would also require amendment to the subject Housing Element.

The Housing Element establishes estimated and projected required rental and sale units for the unincorporated census places and for the unincorporated portions of the Eden and Livermore-Amador Planning Units for 1970, 1976, 1980, and 1990. The Housing Element indicates an existing (1976) and projected deficit within the Unincorporated Livermore-Amador Planning Unit (outside of the cities of Livermore and Pleasanton and excluding Dublin) of smaller, studio and one bedroom rental units and larger four or more bedroom rental housing units (in 1980 and 1990). The Housing Element indicates an existing and projected surplus of three bedroom rental units and deficits of smaller, studio and one bedroom, and larger, four plus bedroom units in the unincorporated Livermore-Amador Valley Planning Unit outside Dublin. In its evaluation of housing for sale, the Housing Element indicates existing (1976) and projected (1980 and 1990) deficits of studio, one and two bedroom units; it shows existing and projected surpluses of larger three, and four and more bedroom units. "Fair Share" allocations of low and moderate income households are included in the Element, based on materials and guidelines developed by the State of California Department of Housing and Community Development. The allocation process is intended to provide a basis for all localities within a housing market area to share equitably in responding to housing needs of the area's non-market rate households; projected households, not housing units, are allocated. Based on non-market rate households a locality can determine the number of affordable housing units that would be necessary to assure that each household is housed in a decent unit at no more than 25 percent of income.

Projections included in the adopted Housing Element for the unincorporated portions of the Livermore-Amador Valley Planning Unit (outside Dublin) are based on, and are consistent with adopted General Plan land use proposals for the area. Hence, the overall projected increases from 1976 to 1990 as well as the Fair Share allocations would relate primarily to anticipated housing development in mostly rural areas of the

Planning Unit. The Element serves to characterize the quality of housing need in the context of adopted land use policies. It does not serve to project potential demand which would exceed residential holding capacity established primarily in the County Land Use Element. The measure of the proposed development's consistency with the adopted Housing Element will concern the degree to which it meets overall, and generally applicable objectives regarding the character of residential areas, the quality of housing, as well as the desired "match" between the more specific needs of households and the size, tenure, cost, etc., of housing units. At this time, only general information is available regarding the proposed housing stock. It can be expected that, given the scale of the proposed development, the mix of units by density and type, the high percentage of multiple units, and the long time period over which the project would be constructed, that the proposal could provide for a broad range of housing needs. This would be ensured through referral to the adopted Housing Element Action Program as individual residential developments are submitted for approval.

8a. Increase Employment and Decrease Commuting: To increase the ratio of employment to population and to minimize commuting through implementation of land use regulations, provision of community facilities, such as sewage treatment; and dissemination of information which promotes business and industrial development.

Impact

Significant increases in employment are currently projected for the project Primary Market Area (including the Livermore-Amador Planning Unit), above those anticipated in the adopted Plan. The proposed development is intended to, and per the current DEIR analysis, would help to improve the supply of needed housing within the PMA. The current proposal calls for a long-term "balance" internal to the project of housing and employment opportunities which could be ensured through provisions of the Plan Amendment, Planned Development Rezoning, or specific actions during later planning and development stages.

8b. Strengthen the Local Tax Base: To strengthen the local tax base through implementation of land use regulations, provision of community facilities, and dissemination of information which promotes business and industrial development.

Impact

The proposed development would result in net fiscal benefits to the County. See Section 5.8 for discussion of Fiscal Impacts.

8c. Guide Growth: To guide growth in the Planning Unit so that community services can be provided in an efficient and economic manner.

Impact

See 2b above.

8d. Locate Industry on Large Tracts:

Impact

Proposal is consistent with objective.

8e. Promote Compact Business and Commercial Areas:

Impact

Proposal is consistent with objective.

8f. Promote Development of Central Areas:

Impact

Proposal is consistent with objective.

8g. Encourage Commercial Development which Equitably Distributes Benefits and Minimizes Trips:

Impact

Proposal is consistent with objective.

9a. Reduce the Need for Routine Travel: To reduce the amount of routine travel, such as shopping and work, through planned patterns of land use.

Impact

Project proposals for internal development of residential, commercial, office, industrial and public uses would be consistent with objective.

9b. Provide and Maintain Scenic Routes:

Impact

Project would have minimal impacts on vistas from designated scenic routes.

9c. Conserve Energy and Resources: To promote and give priority to those transportation systems which minimize usage of energy and resources, including land and valuable minerals.

Impact

No specific transit proposals are included as part of the project, although the proposed land use pattern would allow for efficient use of public transportation services should these be incorporated into or extended to the development.

9d. Reduce Pollution: To promote and give priority to those transportation systems which minimize pollution, particularly air pollution.

Impact

See 9c above.

9e. Compatible with Surrounding Uses: To locate transportation systems where they are compatible, in terms of safety, visual appearance, and levels of sound and vibration.

Impact

See Sections 2.0 and 5.7.

9f. Reduce Automobile Usage: To reduce dependency on the automobile through promotion and development of other transportation systems, such as bicycles and public transit, and through land use patterns.

Impact

Proposal is consistent with the objective.

9g. Improve Safety and Reduce Congestion: To improve the safety and reduce the congestion of roadways through capital improvements and promotion of alternative means of transportation.

Impact

See Section 5.7.

9h. Develop and Maintain a Bikeway System:

Impact

A bikeway system is proposed as a component of the project circulation system.

9i. Maintain and Improve Rail Transportation:

Impact

Not applicable.

9j. Develop and Maintain Public Transportation:

Impact

See 9c above.

9k. Recognize the Livermore Airport as a General Aviation Facility:

Impact

Not applicable.

10a. Guide Development to Preserve Agricultural Lands: To guide urban development toward less productive lands, preserving for agricultural use those remaining un-urbanized Class I and Class II soils, soils which are capable of growing valuable crops, and as much land which can support the grazing of animals as possible.

Impact

Proposal is not fully consistent with the objective. See Sections 5.3 and 5.12 for discussion of the project area's suitability for alternative agricultural uses.

10b. Conserve Soil Resources in Agricultural Areas:

Impact

Not applicable. See Sections 4.3 and 5.3.

10c. Promote Programs which Make Continued Agricultural Use of Land More Feasible: To promote and encourage the use of programs, such as the Williamson Act, which make it more economically feasible for land to continue in agricultural use.

Impact

See Section 5.3 for discussion of project consistency with Williamson Act.

11. Mineral Extraction:

Impact

Objectives pertain to sand and gravel quarry operations (particularly in areas south of I-580 freeway, outside the project area) and therefore are not applicable to the current proposal.

12a. Provide a System of Parks:

Impact

Project is consistent with objective.

12b. Restrict Alteration of Streambed and Bodies of Water:

Impact

See Section 4.4.

12c. Leave Natural Ridgelands Open:

Impact

None.

12d. Restrict Development in Hill Areas:

Impact

See Sections 2.0 and 4.2.

12e. Preserve Trees:

Impact

See Section 4.2.

12f. Protect and Enhance Public Views:

Impact

See Sections 5.4 and 5.9.

12g. Review Location and Design of Signs and Utility Lanes:

Impact

See Section 5.9 for discussion of visual and aesthetic impacts and mitigation.

12h. Encourage Preservation of Places of Historical Significance:

Impact

See Section 5.13.

13a. Encourage the Provision of Schools:

Impact

Proposal is consistent with objective.

13b. Promote a System of Libraries:

Impact

See Section 5.5

13c. Promote a Community College:

Impact

Not applicable.

Alameda County Airport Land Use Commission

Setting, Impacts, Mitigation

Approximately 110 acres in the southeast corner of the site lie within the Livermore Municipal Airport Height Restriction Area and General Referral Area of the Livermore Municipal Airport as established in the Airport Land Use Plan. Proposed land uses for this area include the sewage treatment plant, brine evaporation pond, and a portion of a business/industrial park. It is unlikely that any structures in this area would exceed two stories in height. As specific plans are proposed, these would be subject to review by the Airport Land Use Commission.

City of Livermore

Although the Livermore sphere of influence does not include the Las Positas site, the Livermore planning area consists of 139 square miles, occupying all of the Livermore Valley (Figure 5.3, Livermore General Plan - 1976-2000). Although the plan has no legal effect on unincorporated land, it indicates the City's intentions for future uses of these lands.

The Livermore General Plan restricts development in the Las Positas Valley to the area north of I-580, south of Hartford Avenue, east of North Livermore Avenue and west of Springtown. Within these boundaries, the southwest and northeast corners have been targeted for urban low medium residential (3 du/acre), the northwest section and a very small area in the southeast corner for urban low residential (1.5 du/acre) and the central area for open space. There are also two sites for community facilities. Outside of this development area, the plan calls for General Agriculture (100 acre minimum site). Adjacent to the Las Positas site are designations for a mixture of commercial and low and rural residential uses south of I-580, the Chabot Junior College extension to the west, and the Springtown medium density residential development to the east.

Livermore's General Plan projects a population of 82,000 by the year 2000[1]. This figure is based on area holding capacity and a two percent annual growth rate established as official city policy. In 1980, 48,150 people lived in Livermore. The General Plan designates the Las Positas area within the long-range phase which anticipates development after 1990[2]. Phasing has been established based on the timed provision of municipal services, and the desire to develop complete self-sufficient neighborhoods. The General Plan foresees an increasing percentage of the city's housing and population located north of I-580, from 8 percent in 1975 to 17 percent in the year 2000.

The City's present water reclamation plant expansion project will accommodate an additional 2,200 residential units, providing approximately 30 percent of the capacity necessary to serve the additional 6,000 units possible within existing city limits under current zoning. Additional plant expansion will be necessary to accommodate this and any future growth[1].

Although the General Plan states that the existing trunk line collection system has a service area capacity which can, to an extent, serve the ultimate development projections of the plan, several major new trunk lines would be required to serve the Las Positas Valley[2]. These lines are shown as proposed

[1]City of Livermore, "Livermore Sphere of Influence Study", August 1981.
[2]City of Livermore General Plan, 1976.

sanitary sewer trunk lines in the General Plan.

The City of Livermore Water Company provides services primarily to the Springtown area on the east edge of the Las Positas Valley. Some excess capacity is probably available to serve a portion of the Las Positas area, but full development of the Las Positas Valley would require the installation of a new elevated storage tank and connection to the Zone 7 cross valley pipeline[1].

The existing fire station in Springtown could provide a five minute response time to approximately one-quarter of the Las Positas Valley[1]. Full development of the valley would require construction of new stations.

The General Plan map indicates three major streets serving the valley from the south and an additional east-west street connecting Livermore Avenue to Vasco Road. Only portions of Vasco Road and Springtown Boulevard have been improved to major street status. General Plan policies state the street additions or widenings will not occur until a developer builds the improvement or widening is justified due to high traffic volumes[2].

The Livermore General Plan was revised in 1976 and the most recent map amendments were made in December, 1981. Although the Livermore General Plan extends the City's planning area beyond the current city limits into Las Positas Valley, this area has been specifically excluded from the City's sphere of influence by LAFC Resolution No. 81-43, November, 1981. The City Plan limits urban development to approximately the area south of Hartford Avenue, east of North Livermore Avenue and west of Springtown (Figure 5.3). Within this area the plan calls for primarily low density residential uses with some commercial. In comparison, the proposed Las Positas Plan incorporates residential, commerical, industrial, and other community uses, as well as a higher average dwelling unit density (7.7 du/acre).

The proposed Las Positas development would occur much sooner than if the area were to develop under Livermore General Plan policies. Because the Las Positas Valley is included in the long-range phase, city General Plan policies directing the extension of public facilities call for a number of future improvements which as yet have not been committed. Substantial increases in sewer treatment capacity, new trunk lines, new water storage tanks and connection to the Zone 7 cross valley pipeline, new fire stations and new arterials would be required to serve the area. While some excess capacity apparently exists in fire and water service currently being provided to the Springtown area, the City of Livermore would have to provide new public improvements similar to those proposed in the application if it were to serve the full development of the Las Positas Valley.

The proposed Las Positas roadway system is the same as the City's major street plan for the southern portion of the Valley.

In reviewing the City's application to extend its sphere of influence, LAFC found that Livermore has an adequate sphere of influence to accommodate anticipated growth given current City policies. Under these policies, the City would reach a population of approximately 67,800 by the year 2000 (see Section 8.0). The proposed Las Positas project would add approximately 34,385 people to the area by the year 2000, resulting in a total population of 102,185. This is about 20,000 more people than projected in the Livermore General Plan.

[1]City of Livermore, "Livermore Sphere of Influence Study", August 1981.
[2]City of Livermore General Plan, 1976.

Association of Bay Area Governments (ABAG)

The Association of Bay Area Governments (ABAG) was established in January, 1961 as an areawide comprehensive planning agency by the cities and counties in the San Francisco Bay region. One of the principal strategies of ABAG's Regional Plan 1980, is the "city-centered" approach to regional growth. This approach calls for urban growth along general growth corridors and in and around existing communities. The ABAG plan also recognizes the potential benefits of new communities and recommends that "all levels of government should foster and assist in the development of entirely new planned communities or the planned expansion of some existing small settlements into new communities". (ABAG Regional Plan 1980, Regional Strategies, Page 3)

In general, the Las Positas proposal is consistent with ABAG policies as stated in the "Regional Plan 1980, San Francisco Bay Area". Although ABAG new community policies call for new towns of at least 100,000 population, compared to the maximum 45,000 population projected for Las Positas, the policies of the project proposal are consistent with ABAG guidelines that new communities should provide employment opportunities in proportion to the number of resident workers.

In 1975, ABAG prepared and adopted by Resolution No. 3-75 a review report on the original proposal for Las Positas. The policy statement concerning the Las Positas proposal and other similar major development proposals or growth inducing actions in the Livermore-Amador Valley was:

> A number of serious regional problems exist in the Livermore-Amador Valley, many of which have resulted from policies and actions of federal, state and regional bodies beyond the control of Valley residents and governments. The serious nature of valleywide problems combined with problems of the Las Positas proposal make the development premature and in serious conflict with regional policies. Other similar proposals or growth inducing actions would likewise potentially be in serious conflict with the Valley itself. The proposal is premature not only because of conditions in the Valley but also because it calls for adding substantial growth in that uniquely troubled area while other portions of the Bay Area, some nearby, contain excess urban service capacity and may be well suited to development. Development in such areas would be supportive of regional policies. In fact, part of the conflict associated with the Las Positas proposal typifies one aspect of the land development process in the Bay Area - pressure to encourage leapfrog conversion of land to urban uses at the expense of the effort to rebuild and strengthen existing cities and urban resources.

The report also listed examples of changes in existing conditions that would need to occur in order to eliminate conflicts and inconsistencies with regional policies:

1. Evidence that air and water quality standards required by federal and state law can be achieved and maintained.

2. Reduction in commuting from the Valley to other parts of the region which would be a major step toward establishing air and water quality standards, and a better balance of jobs and housing in the Valley.

3. A range of employment opportunities appropriate to the skills and income characteristics of economically disadvantaged residents in the region to ensure existence of balanced population.

4. Increased opportunities for low and moderate income persons to live and work in the Valley.

5. A coordinated program of planning and governmental organization to meet the problems of the Valley consistent with regional policies which will be used as the basis for planning and governmental decisions by all public agencies in the Valley.

Principles for review of additional proposals for development in the Livermore-Amador Valley were:

1. Further growth in the Valley is expected. It must, however, be undertaken only in the context of a better job-residence balance, more balanced communities, and a firm and demonstrable commitment to solution of the pressing environmental problems of that area.

   a. First priority for growth should be those areas where cities have made existing commitments.

   b. Second priority should be in areas where service capacity and adequate governmental mechanisms are in place to ensure balanced and managed development in accordance with consistent Valley-wide plans and policies.

2. Decision makers must recognize that, in this circumstance, regional questions of community balance, jobs related to population, and the pressing environmental issues require cooperative rather than independent action in order that regional policy objectives may be fulfilled.

Changes in existing conditions have occurred since ABAG prepared its review report in 1975:

1. There have been unforeseen increases in employment growth within the PMA.

2. Air quality has been improving in the Valley, primarily due to increased vehicle emission standards.

3. Feasible technology exists to construct a discrete wastewater treatment and disposal system which meets established standards.

4. High interest rates and the lack of housing supply has combined to decrease the opportunity for low and moderate income households to find appropriate housing.

5. Alameda County has established a policy and an approval process, involving LAFC, to establish CSAs in unincorporated areas. The County

has adopted the "Livermore-Amador Valley Planning Unit General Plan".

The first two principles for review established in the 1975 report are not specifically met by the current proposal.

California Conservation Act (Williamson Act)

The California Conservation Act of 1965, commonly referred to as the Williamson Act, was passed in the state legislature to provide property tax relief to owners of agricultural property. Rather than assessment by comparable sales value, this bill called for agricultural property to be assessed on the income generation potential of the property, if the owner would enter into a contract with the city or county in which the property was located, agreeing to limit use of the property to agricultural and compatible uses for a ten-year period. Reduced revenues to the County are partly reimbursed through the State Open Space Subdivision Act.

Williamson Act cancellation has been proposed for 773 acres of the 1,675 acres within the site boundaries having agricultural preserve status. (See Figure 5.6). The Williamson Act as amended by AB 2074 provides two mechanisms for cancellation of the preserve contract:

Government Code Section 51282.1

Petitions were filed by February 1, 1982 for cancellation of 773 acres of Agricultural Preserves (shown on Figure 5.6) under provisions of amended Government Code Section 51282.1 (AB 2074, Robinson Bill). Under Section 51282.1 landowners have until May 31, 1982, to file petitions to cancel. To approve cancellation the County must find that the cancellation and alternate use will not result in discontiguous patterns of urban development, and the alternative use is consistent with the County General Plan in effect on October 1, 1981, or as amended after October 1, 1981 as a result of proceedings initiated by the landowner or local government prior to January 1, 1981.

Approval of the proposed General Plan Amendment would establish one of the findings necessary for cancellation.

It would be possible to find that the project as a whole will not result in discontiguous patterns of urban development in that it would adjoin and be in proximity to existing and planned urban uses in the Livermore-Springtown area.

It is possible that a discontiguous pattern of urban development could result if some landowners within Las Positas decide to continue agricultural use.

Government Code Section 51282(a)(2)

The landowners who have petitioned for cancellation under section 51282.1 have also petitioned alternatively under this sub-section. Under this sub-section, the County may approve a cancellation if such would be in the public interest. In order to prove that cancellation is in the public interest, the County must find the following:

1. other public concerns substantially outweigh the objectives of the Williamson Act;

2. there is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate non-contracted land.

These findings are not established in the present analysis.

Alternatives to Cancellation

Alternatives to the proposed Williamson Act cancellation include "non-renewal" and cancellation of only a portion of the acreage.

"Non-renewal" entails a ten-year waiting period before the property can be used for non-agricultural purposes. As is illustrated in the phasing plan (Figure 2.5), the parcels proposed for cancellation are in the early stages of the development program. "Non-renewal" of the Williamson Act parcels could delay the entire program, force disjointed development, or require revisions to the phasing program.

California Urban Strategy

The State Office of Planning and Research prepared a booklet, An Urban Strategy for California (1978), which state agencies are to use when making decisions affecting development. In the case of the project, Caltrans may have to approve an encroachment permit for work within the I-580 right-of-way. Other state agency approvals of various aspects of the project may be required. Thus, the Urban Strategy is included here as relevant to the project. The essence of Urban Strategy calls for new urban development in California to be located according to the following priorties:

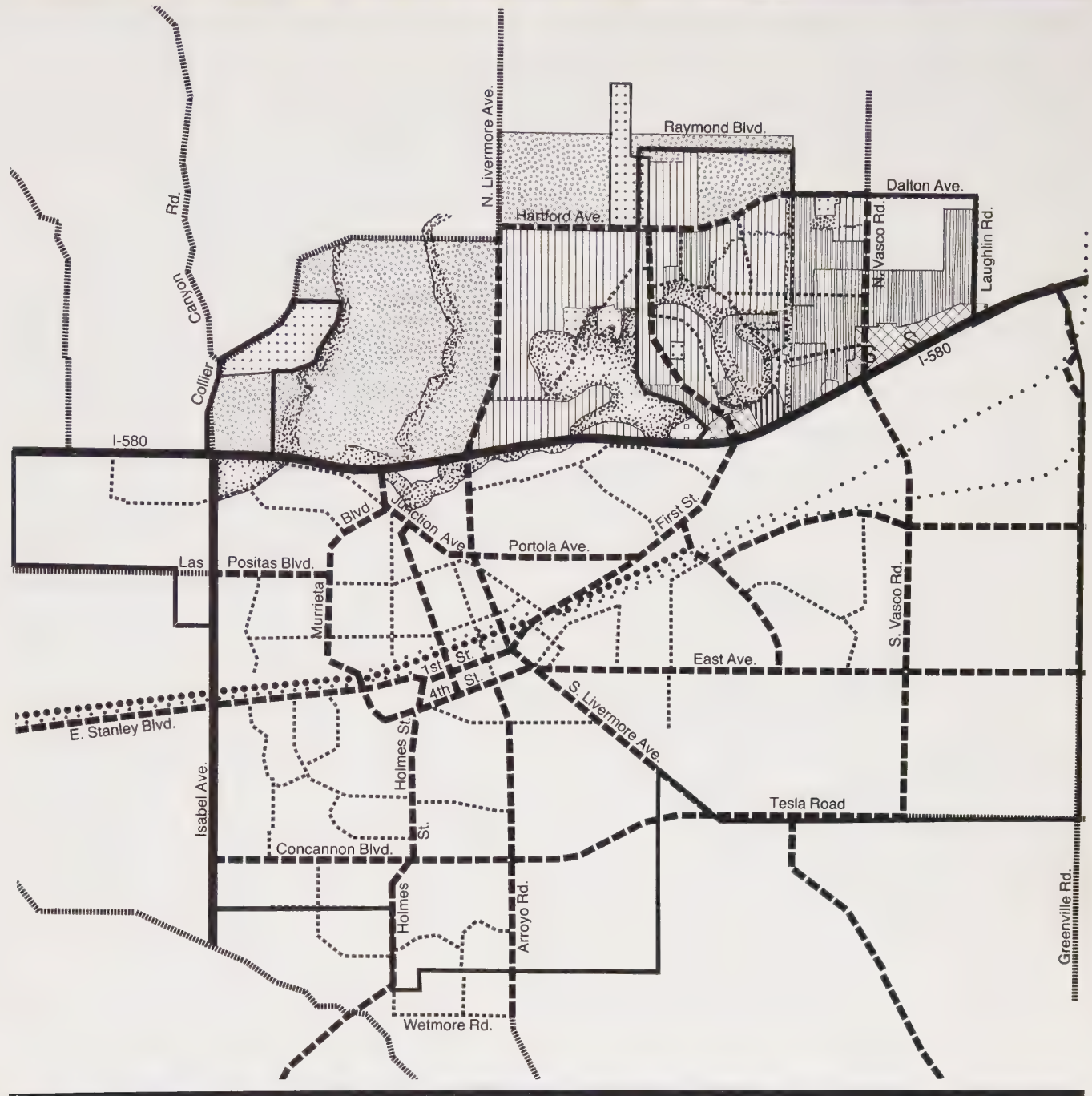
First Priorty:
Renew and maintain existing urban areas, both cities and suburbs.

Second Priority:
Develop vacant and under-utilized land within existing urban and suburban areas presently served by streets, water, sewer and other public services.

Third Priority:
When urban development is necessary outside existing urban and suburban areas, use land that is immediately adjacent. Noncontiguous development would be appropriate when needed to accommodate planned open space, greenbelts, agricultural preservation or new town community development.

The project would appear to fall within the third priority.

Transportation policy of the Urban Strategy follows the general priority scheme outlined above, with an emphasis on providing service through public transportation facilities. The project would be supportive of public transit through designation of a transit terminal and major transit route to the town center, providing for continuous concentrations of medium and high density housing, and providing for an eventual balance of employment and housing opportunities.



LIVERMORE GENERAL PLAN 1976-2000

FIGURE 5.3

PROTECTED OPEN SPACE
GENERAL AGRICULTURAL
INSTITUTIONAL

RESIDENTIAL
LOW RURAL
LOW URBAN
LOW MEDIUM
MEDIUM
MEDIUM HIGH
HIGH

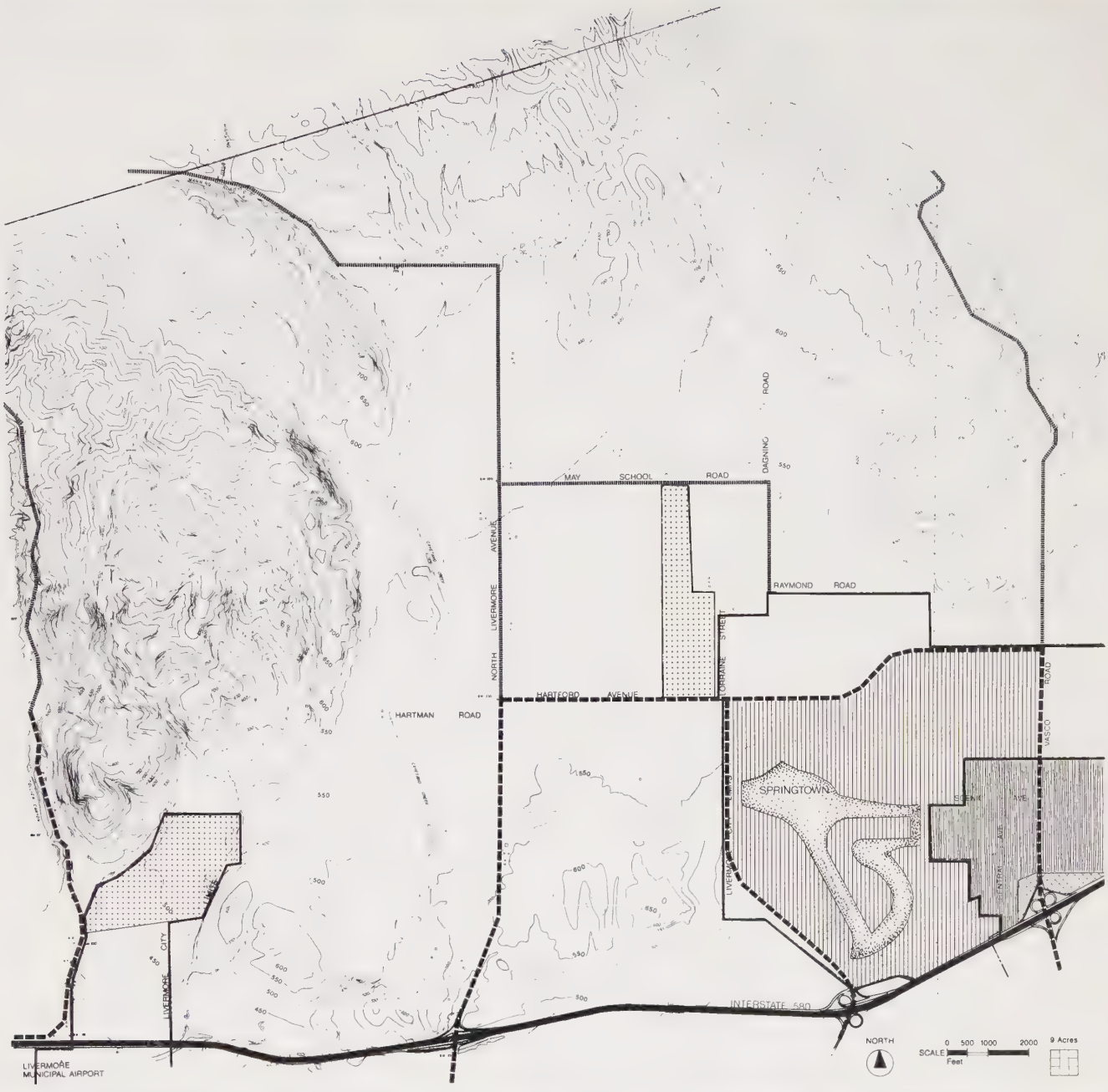
COMMERCIAL
C COMMUNITY
H HIGHWAY
S SERVICE

INDUSTRIAL
LOW
HIGH

CIRCULATION
FREEWAY
MAJOR RURAL ROAD
MAJOR ARTERIAL
COLLECTOR
RAPID TRANSIT
RAILROAD

LIVERMORE SPHERE OF INFLUENCE

LAS POSITAS GENERAL PLAN AMENDMENT APPLICATION—1982



ALAMEDA COUNTY GENERAL PLAN

FIGURE 5.4

LAND USE

- LOW RESIDENTIAL
- RURAL RESIDENTIAL
- MAJOR COMMERCIAL
- MAJOR PUBLIC
- MAJOR PARKS

CIRCULATION

- HIGHWAY
- MAJOR RURAL
- MAJOR ARTERIAL

SOURCE: ALAMEDA COUNTY PLANNING DEPT.
LAS POSITAS GENERAL PLAN AMENDMENT APPLICATION—1982

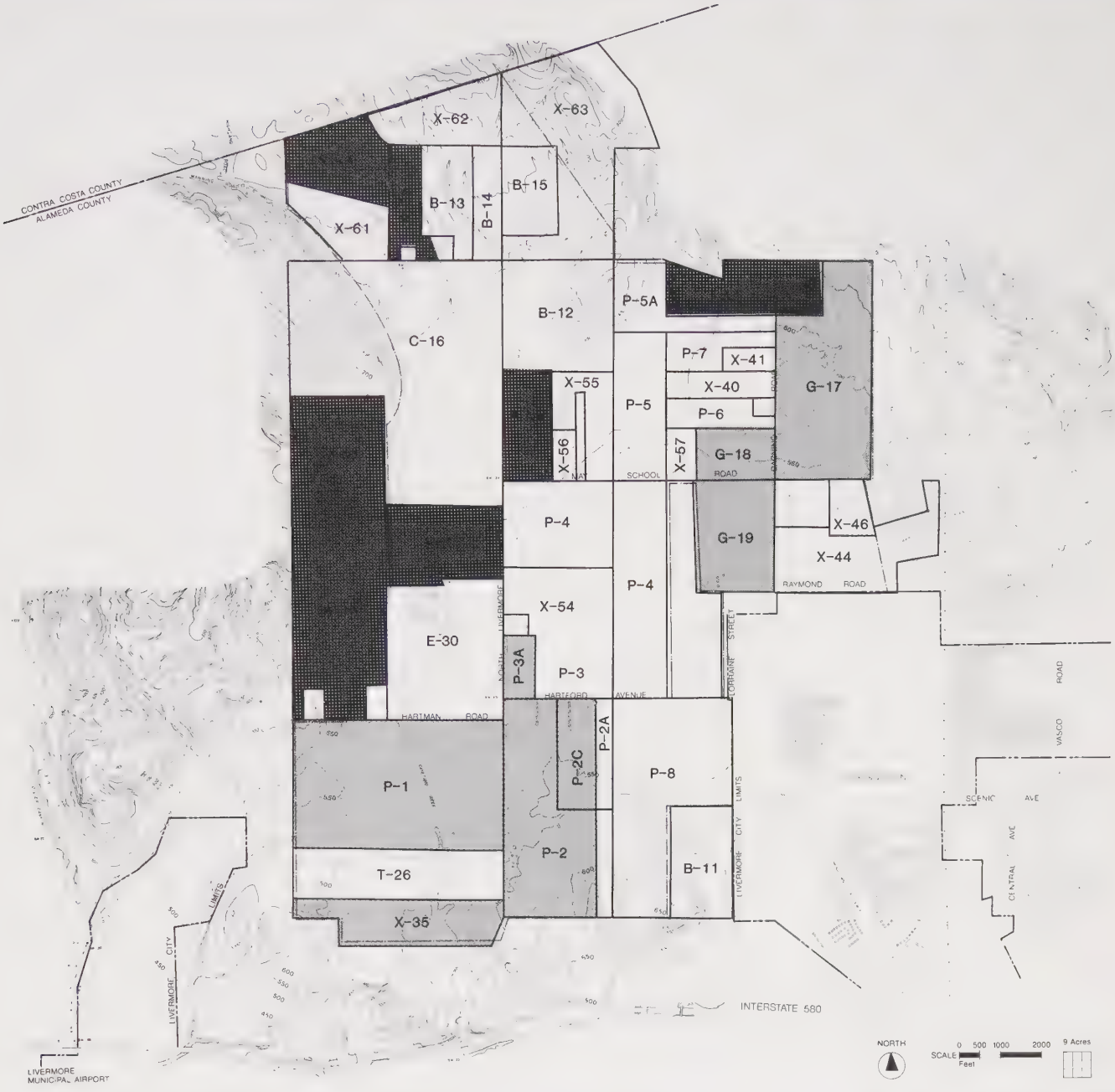


ALAMEDA COUNTY OPEN SPACE PLAN

FIGURE 5.5

PRESERVES OPEN SPACE

AGRICULTURAL OPEN SPACE



PARCELS PROPOSED FOR WILLIAMSON ACT CANCELLATION

FIGURE 5.6

PARCELS FOR WHICH PETITIONS FOR CANCELLATION FROM THE WILLIAMSON ACT WERE FILED BY FEBRUARY 1, 1982

OTHER PARCELS IN WILLIAMSON ACT

5.4 UTILITY RIGHTS-OF-WAY AND EASEMENTS

Setting

Major utility easements and rights-of-way of the Las Positas area are shown in Figure 5.8, Existing Utilities. The most significant utility rights-of-way are a 100-foot-wide north/south segment of a high-pressure gas transmission line through Las Positas Valley along Vasco Road and a 15-foot wide easement for a 24" gas main cutting diagonally from southwest to northeast through the property. There are other rights-of-way for roads, as well as gas and electric power.

Impacts

The easements and rights-of-way for roads and utility lines described above are not major constraints to the proposed Las Positas development. Adequate setbacks from the sensitive gas transmission line could be maintained. The following indicates PG & E policy regarding permissible uses within PG & E rights-of-way. (Letter to Wilsey & Ham, April 20, 1982).

> "In general, we will permit any use that is not inconsistent or in interference with our rights. All our easement deeds prohibit the erection or construction by the grantor of any buildings, structures or wells within the easement strips. In this context we would also prohibit swimming pools, concrete slabs over the pipelines, and cross-fencing such as for backyards.
>
> We permit, and in specific instances encourage, parking areas, roads and trees, parks or open space areas. In connection with streets or parking areas, we allow underground utility crossings such as sewers, storm drains, waterlines, etc., provided proper clearances from our facilities are maintained. We discourage parallel encroachments of such facilities since they in essence diminish our easements.
>
> We take a careful look at any grading that is proposed in any of our easements. For electric overhead lines there are certain legal ground-to-conductor clearances which must be maintained. A substantial reduction of ground cover can expose pipelines to danger; a substantial increase in the ground cover impairs our ability to locate problems and make repairs, thus increasing our cost of operations."

Mitigation

PG & E would be consulted as specific plans are proposed within Las Positas, so they can assure that all restrictions on use within their easements are applied. PG & E would also be consulted regarding the need for, design, and location of anticlimbing guards, warning signs, fences, etc., to minimize vandalism to utilities.

5.5 PUBLIC SERVICES

NOTE: The following section reviews project impacts on public services in terms of staffing and facility requirements. Associated fiscal impacts are addressed in Section 5.8.

POLICE PROTECTION

Setting

Police service for Las Positas Valley is presently provided by the County Sheriff's office for criminal matters and the California Highway Patrol (CHP) for traffic control.

The Livermore/Amador Valley is served by the Eden Township Sheriff Station which serves all of the unincorporated area of Alameda County. The County Sheriff provides a full range of crime control services on an as-needed basis.

The County Sheriff staff is divided into four categories: patrol, investigations, service and administration. Within each category are various officer levels, ranging from captain to traffic officer. The Livermore-Amador Valley is currently served by three shifts of officers per day, seven days a week. Officers are assigned to each shift as follows:

Deputies (patrol duty)	2
Sergeant	1
Lieutenant	1

The deputies are dispatched from and the sergeant and lieutenant are stationed at the Eden Township Substation in San Leandro.

Investigators and other special duty officers are dispatched from the same substation as needed. Additional officers may be called from nearby city police departments on a mutual aid agreement basis in an emergency.

The California Highway Patrol provides traffic service through standard patrols and a Special Enforcement Unit. There are currently four to six patrol units patrolling approximately 40 miles of Interstate 580 freeway. The Special Enforcement Unit handles trouble spots throughout the unincorporated portions of southern Alameda County.

Project Proposal for Police Protection

It is proposed that police protection service for the proposed Las Positas development continue to be provided by the Alameda County Sheriff's office. A local police station, staffed by the Sheriff, would be constructed in Las Positas during Phase III.

Impacts and Mitigation

Assuming the standard of service for Las Positas would be similar to that existing in Dublin, the following county staff would be required:

Patrol (1 per 274 DU)	
Lieutenant	1.6
Sergeant	11.4
Deputy	52.1
Traffic	.9
Total	66

Investigations (1 per 1,231 DU)	
Lieutenant	1.0
Sergeant	11.7
Deputy	2.3
Total	15.0

Service (1 per 2,830 DU)	
Lieutenant	.6
Sergeant	.6
Deputy	4.8
Total	6.0

Administration	(1 per 16,364 DU)
Captain	.5
Lieutenant	.5
Total	1.0

Initially, the investigations, service, administration and patrol personnel would operate from the Eden township station. During Phase III, it is proposed that a local police station would be constructed in Las Positas.

During phases of project buildout prior to Phase II, it could become problematic to serve the Las Positas community from the Eden substation. This could be mitigated either by reactivating the Santa Rita Substation (closed at the time of Dublin's incorporation) or by constructing a police station in Las Positas at a time earlier than is currently proposed.

Based upon an estimation of 6.5 officers per posted position (posted position refers to the number of officers required to staff one patrol car for three shifts over a 24-hour period, allowing for vacations, reliefs, and 2 officers per car between the hours of 8 p.m. and 4 a.m.), the estimated 66 additional patrolmen represent approximately 10 patrols. Taking into consideration maintenance and accident loss, it is estimated that 13 new vehicles would be required.

Although the level of service estimated for the proposed Las Positas development is based upon residential, commercial and industrial development, the planned residential units would represent the bulk of demand. The addition of staff and patrol vehicles would therefore be phased with residential development (approximately 25% per phase).

Impacts could also be felt by the Livermore Police Department. Since Livermore is the nearest established community, a portion of the Las Positas

population would likely be attracted to the commercial and recreation areas. This would probably result in added police calls. Additionally, assuming Las Positas and Livermore have a mutual aid agreement, the Livermore Police Department would undoubtedly receive more mutual aid calls than are currently received from the project area.

Traffic patrol service would be provided by the California Highway Patrol (CHP). The CHP estimates a need for nine (9) additional officers and three (3) patrol vehicles to serve the Las Positas area. This would allow for one or two officers at any given time and an average requirement of 5.5 officers per day. In addition, development of Las Positas would place an increased demand upon "Late Night Response" vehicles, but no additional staff would be required. All patrols serving Las Positas would operate out of the existing Hayward station.

FIRE PROTECTION

Setting

Structural fire protection service to the project area is currently provided by the Alameda County Fire Department. The fire station is located at College and "P" Streets in Livermore, providing a response time of 5-7 minutes to the site. The Alameda County Fire Department provides service to all of the unincorporated portions of the county, except the Sunol area which is served under separate contract by the State Department of Forestry. The Department also provides wildland fire protection services to the Livermore-Amador Valley through fighting brush fires. The County maintains a mutual aid agreement with Livermore, the Dublin-San Ramon Services District, Pleasanton, the local veterans hospital and Lawrence Livermore Laboratory.

The County fire station in Livermore maintains a staff of three captains, nine firemen and one chief with one captain and three firemen assigned to each shift. Equipment on location includes:

1 tanker - 1,000 gpm (1,000 gal. storage)
2 squad trucks (grass/rescue)
1 pickup
1 chief's car

In addition, a contract is held with the State Office of Emergency Services and one of their trucks is kept at the County station at all times.

The Alameda County Fire Department service area currently has an Insurance Service Office (ISO) rating of 9.

Impacts

The proposed development would require fire protection services beyond those currently available to the project area. New, adequately staffed and equipped stations would be needed within the project area, as would adequate water supplies to provide necessary fire flows. It is expected that the facilities, staffing levels, and water supply system currently proposed for the project, below, would be adequate to qualify the project to an Insurance Service Office rating of 4.

Project Proposal/Impacts Mitigation

A. Organization and Responsibilities

It is proposed that fire protection serice to the proposed Las Positas development be initially provided by the Alameda County Fire Department through a contract with the proposed County Service Area. The CSA would monitor and evaluate fire protection services twice yearly to determine when it would be appropriate for the CSA to establish a separate fire protection organization for Las Positas.

B. Capital Improvements and Staffing

Trucks and equipment for the first Las Positas fire station would be purchased prior to any construction in the Las Positas area. It is proposed that, during the first months of construction in Las Positas, these be operated out of either the planned "Northbluff" development to the west of Las Positas or from the existing College and "P" Streets station in Livermore. No additional staffing would be provided to these stations during this interim period.

Three new fire stations are proposed for Las Positas. These would include a 2,500 square foot satellite station in Phase I, and 8,000 square foot headquarters station in Phase III, and a second 2,500 square foot station in Phase IV. A "full service" system would be provided during Phases I and II; this would become a "stand alone" system (with chief, marshall and clerk-typist) in Phase III. The intent of the sponsors is to provide at least a four minute response time at all times.

All three stations would be equipped with a squad truck and 1,500 gpm pumper. Stations build in Phases III and IV would be equipped with a half-ton pickup truck. The headquarters station, built during Phase III, would be equipped with a 1,500 gpm ladder truck (85' tower rig). All would be equipped with necessary uniforms and safety and firefighting equipment.

The stations are proposed to have four firefighters on duty at each of all times (one captain and three firefighters). To attain a "minimum manning level" (per the U.S. Fire Administration's Urban Guide for Fire Prevention and Control Master Planning), a factor of 3.45 would be applied to a one-shift personnel requirement such that 13.8[1] men would be hired to serve each station for 24-hour, 7-day protection (a total of 41 full-time and one half-time shift). At least 12 men would be on duty to serve the completed Las Positas project. If multiple or multi-story fires require additional help it is proposed that mutual aid agreements be utilized. The need for this assistance would probably be greatest during Phase I and II when only one station would be available in the Las Positas Area.

[1] Federal staffing guidelines recommend up to 18 men for a 3.5 minute response time with an 8,000 gpm fire flow. These levels are conservative as very few organizations attain them. If the Las Positas staffing level as proposed, is determined to be insufficient by the ISO, adjustments to staffing would be made.

The proposed fire protection organization would provide limited emergency medical service to the Las Positas community. It is proposed that the CSA contract with a private ambulance service until such time as it became financially feasible to operate emergency medical service out of the fire protection organization.

C. Fire Flow

Fire flow requirements at project buildout would be 5.0 million gallons per day, at a rate of 8,000 tpm for 10 hours. To provide this and another 8.0 mgd for average consumption a total of 13.5 mg storage is proposed; each of Phases I, II, and IV would have a 3.6 mg storage tank, with a 3.0 mg tank for Phase III. These tanks would be located outside the project urban area at elevations suitable to achieve required pressures.

A total of 355 fire hydrants would be required at buildout; the location of these is not indicated at this time.

EDUCATION

Setting

The Las Positas project area is included in the Livermore Valley Unified School District, the largest school district in Alameda County. District enrollment capacity is 15,452 with existing facilities, and current enrollment is estimated to be 11,350. The District's standards for school site sizes and number of students per site are:

10 acre site	K-5	600 students
20 acre site	6-8	1,000 students
35-40 acre site	9-12	1,500 students

Total District enrollment has decreased approximately 4% annually since 1975. During this same period, household sizes have also decreased such that the current student generation factor is .7 children per residence (.3, K-6; .15, 7-8; .25, 9-12). This is an average for all housing types.

The district has a total of 11 elementary schools, three middle schools and two high schools. None of these facilities are in the Las Positas project area. The nearest elementary school, in Springtown area, is located to the east of the Las Positas area.

The middle schools and high schools are all at capacity. Last year, two of the elementary schools were closed and a third is currently proposed for closure. Almond Avenue and Rincon Avenue elementary schools have been closed as a result of District declining enrollment over the past few years. Lawrence Livermore Labs has a renewable five year lease on the Almond Avenue facility. The Rincon Avenue school is presently leased. The Fifth Street elementary school will be closed, but will continue to be used by the school district. Somona elementary school is also proposed for closure. It is unknown at this time what will be done with the facility. These schools may or may not be available to house students from the project.

The Las Positas site is within the South County Joint Junior College District. The District constructed the Valley Campus of Chabot College located near the southwest corner of the Las Positas site.

Other educational facilities in the Livermore area include two parochial schools, one bible college and a University of California graduate facility at the Lawrence Livermore Laboratory, specializing in nuclear engineering and applied sciences.

Impacts

New schools for the proposed Las Positas project would operate within the Livermore Valley Unified School District system. Based upon student generation factors of 0.3/dwelling unit for grades K-6, .15/dwelling unit for grades 7-8, and 0.2/dwelling unit for grades 9-12, Las Positas would be expected to generate the following enrollment levels at full project development.

Grade	Students/DU	Students
K-6	0.3 x 18,000 =	5,400
7-8	0.15 x 18,000 =	2,700
9-12	0.2 x 18,000 =	3,600

Based upon District facility standards, the following schools would be needed in the Las Positas project area:

Grade	Adjusted No. of Students*	Standard	Required No. of Schools
K-5	4,630	600	7.7
6-8	3,470	1,000	3.5
9-12	3,600	1,500	2.4

*The school district has changed its distribution of grades among schools from K-6 and 7-8 to K-5 and 6-8. This column reflects this change.

Project Proposal/Impacts Mitigation

The proposal of the Las Positas Land Company calls for eight elementary, three middle, and two high schools. If enrollment equals that currently projected, the middle and high schools would need to be slightly larger than the "standard" used by the District.

The sponsor's proposal calls for the construction of two elementary schools in each phase, one middle school in Phases II, III, and IV, and one high school in Phases II and IV. During Phase I, middle and high school students would need to attend existing schools elsewhere in the District. The students would be required to provide their own transportation (or obtain this from the CSA or other entity), as the School District does not provide busing services.

The timing of school construction is subject to District review and must be consistent with the District's applicable standards and requirements. At this

time, the District proposes that, in addition to two elementary schools, a middle and high school also be provided to serve Phase I.[1/] This approach would be necessary if existing middle and high schools in the District were overcrowded or would become overcrowded with the addition of Las Positas students. This approach would also be preferable given the general isolation of the Las Positas Phase I area from existing schools and the lack of busing services. During Phase I, the 6-8 and 9-12 student populations in Las Positas may not be large enough to warrant standard school facilities. This interim situation could be dealt with through the use of a smaller than standard high school which could be incrementally expanded as the area 9-12 student population increased, and through the assignment of 6-8 grade students to the two elementary schools until such time as this student group was large enough to warrant construction of a middle school.[2/]

The proposed locations of the middle and high schools are indicated on Figure 2.1. Elementary school sites are not shown. The District advises that the location of middle and high schools adjacent to each other is not a satisfactory arrangement, due primarily to problems that could result due to differences in the maturity levels of the younger and older students. This separation could be accomplished through an adjustment in the Land Use Diagram, with final decisions regarding the location of facilities subject to approval by the Planning Commission, with input from the District, at the time specific development plans are submitted.

RECREATION

Setting

The Livermore Area Recreation and Park District (LARPD) includes most of the Murray Township in Alameda County, and contains 245 square miles. The District's boundaries includes the City of Livermore, the Las Positas Valley and most of the Livermore-Amador Valley. Within the district, there are currently about 32 parks and facilities, on approximately 700 acres. There are no developed parks in the Las Positas project area.

Las Positas lies within two LARPD Master Planning Districts - Brushy Peak/Bethany and Doolan Canyon. Plans for these two areas include:

- o acquisition of a large site for a regional facility (Brushy Peak/Bethany)
- o numerous neighborhood and community parks in the Doolan Canyon area
- o coordination of the state's trail system with LARPD's system in the Doolan Canyon area

These facilities proposals are consistent with adopted City of Livermore and Alameda County General Plans which indicate open space and agricultural uses for most unincorporated parts of the LARPD planning districts.

1/ Used in fiscal analysis, Section 5.8.
2/ Telephone conversation with Rudolph Dambra, Director of Facilities, Livermore Unified School District, February 2, 1983.

Las Positas is not within the boundaries of the East Bay Regional Park District. However, the project area is within 30 minutes travel of Del Valle Regional Park, Shadow Cliffs Regional Recreation Area, Morgan Territory Regional Preserve, and Tassajara Creek Land Bank. The EBRPD estimates that both Del Valle and Shadow Cliffs facilities are at capacity. The Morgan Territory Regional Preserve is a regional preserve and, therefore, is largely unimproved. The Tassajara Creek site is also largely unimproved and, under current proposals of the Department of the Army for Camp Parks, may be removed from the Regional Park system.

Las Positas Neighborhood & Community Park Proposals

The following neighborhood and community recreation facilities are proposed for the project:

Type of Park	Number of Facilities	Size of Facilties	Total
Neighborhood (1 per 2,500)	18	10 acres	180 acres
Community (1 per 22,000)	2	25 acres	50 acres
Total	20		230 acres

This is based on LARPD standards and is approximately 1.3 acres per 100 dwelling units. Playfields would be provided with school facilities and unimproved open space has been proposed throughout the project. Including playfields, a total of 330 acres of improved park space are proposed.

The 230 acres of neighborhood and community parks would be fully improved to LARPD standards and dedicated to the LARPD.

Impacts and Mitigation

a. Local Park Facilities

The location of neighborhood parks is not indicated in the Land Use Diagram (Figure 2.1), although suggested locations are indicated in the Open Space Diagram (Figure 2.4). The location of these facilities must be consistent with applicable LARPD and County standards. The proposed locations of the two community parks, generally at the periphery of the community, may not be fully consistent with LARPD and County objectives, which favor locations more central to the serviced population. This inconsistency may be corrected through adjustment of the Diagram (see Section 9.0), and through further studies (prior to the start of construction, and periodically through project buildout) which would be required to refine and implement the current conceptual proposal.

b. Regional Park Facilities

It is expected that Las Positas residents would use East Bay Regional Park District facilities. Assuming a direct relationship between the need for regional park facilities and increases in housing supply with the Las Positas Primary Market Area, it is estimated that with Las Positas and other projected residential development in the PMA, there will be a need by 2005 for a doubling in facilities. The Las Positas project would represent approximately one third of this new demand. The Las Positas proposal includes no provision to mitigate this impact; costs of additional service would need to be borne by the residents inside the EBRPD, either through reduced services or through higher costs.

LIBRARY

Setting

The Las Positas project area is within the Alameda County Library System. This system provides all library services including personnel, books and other services. Presently, the closest County Library System branches to Las Positas are in Dublin and Pleasanton. The City of Livermore maintains a separate city library that is not part of the Alameda County Library System.

Impacts

A new branch facility would ultimately be needed to serve the proposed Las Positas development. The closest Alameda County Library System (ACLS) libraries to Las Positas are in Dublin and Pleasanton. The Pleasanton Library is quite small and heavily used. The Dublin Library is a new building and could accommodate some additional use, but not enough to serve all of Las Positas.

If library facilities are not provided during the early phases of project development, these other Valley facilities, and particularly the close-by Livermore facility, would anticipate additional demand from Las Positas residents.

Mitigation

Ultimately, a 15,000 square foot library should be provided in Las Positas. It is recommended by the Alameda County Library System that bookmobile service could serve the demand resulting from the development of Las Positas until Phase II (1990), when the permanent facility would be built. Until the community reaches a population of 30,000, it is expected that 10,000 square feet of the facility be used as a community library, with the remaining space put to another community purpose. At Phase III, the library would need to expand to the full 15,000 square feet and provide complete community reference library services.

HEALTH CARE

Setting

Acute Care Hospitals

The Valley Memorial Hospital, on Stanley Boulevard in Livermore, and about two miles from the Las Positas project area, is the only acute care hospital in the Livermore-Amador Valley offering services to the general public. The hospital has a certified capacity of 111 beds in the following categories: medical-surgical, 78; perinatal, 15; pediatric, 7; maternity, 1; intensive care, 3; and coronary care, 7.

Emergency services are offered 24 hours a day on a continuous basis.

There are 100 doctors using the hospital. Of this total, 50 doctors are active staff, 30 doctors have courtesy status, and 20 have provisional status.

Currently (1983), the hospital administration is filing a certificate of need with the Office of Statewide Health Planning for an additional acute care hospital, proposed to be built at Livermore Avenue and Las Positas Road. The proposed facility would have a capacity of from 100 to 150 beds. It is assumed that this facility would provide adequate acute care for the expected additional population resulting from new development in the service area; this could include demand resulting from the Las Positas project. The proposed site is about one mile south of the Las Positas project area.

There is no assurance that the new hospital will be built, since the project must compete for state funds with other proposed health facilities in Health Service Area 5 (Alameda and Contra Costa Counties).

Approximately 25 percent of Valley residents are covered by the Kaiser Health Plan, which does not presently operate an acute care hospital in the Livermore-Amador-San Ramon Valley area. The nearest Kaiser hospitals are in Hayward and Walnut Creek.

The Veterans Administration Hospital, a 198 bed facility, is located to the south of Livermore. The Hospital is a regional facility for the exclusive use of military veterans.

Outpatient Care Facilities

The Valley Memorial Hospital operates a Family Medical Center on Alcosta Boulevard in San Ramon Village, located approximately ten miles west of the Las Positas project area. The Center offers out-patient appointment care as well as drop-in and minor emergency services. The Center is open from 9 AM to 9 PM daily, including weekends and holidays.

The Kaiser Permanente Medical Group has scheduled the opening of a new out-patient treatment facility near the Stoneridge Shopping Center in Pleasanton, for April of this year. The facility will have eighteen physicians on staff and will be open Monday through Friday from 8:30 AM to 5:30 PM. A wide range of appointment services will be offered including outpatient surgery. Limited emergency care will also be available.

There are approximately forty-five medical doctors in private practice in the Livermore area; of these, about fifteen are in pediatrics, family practice, or internal medicine; the remainder are in specialized fields of practice.

Convalescent Care

There are four convalescent hospitals in Livermore. These provide an adequate level of service for the present population in the Livermore area, but would not be adequate to serve an increased population.

Intermediate Care

There are no intermediate care facilities in the area. The present need is estimated at fifteen beds. An increase in population would present a concomitant increase in bed need.

Ambulance Service

Tri-Cities Ambulance Inc., is at present the only local ambulance service. It operates in Livermore, Pleasanton and Dublin. Emergency service is generally in response to 911 calls. Wheel chair and gurney services are also available through direct calls to this privately owned and operated service.

Mental Health Care

There are a number of psychiatrists, psychologists, and out-patient mental health care clinics in the Livermore vicinity. There are no known in-patient care facilities in the area.

Impacts and Mitigation

The development of Las Positas would warrant a considerable increase in health care services in the area. The need for an acute care hospital would be satisfied, for the most part, if the proposed Valley Memorial facility at Livermore Avenue and Las Positas is constructed. If not, the level of acute care service would be reduced; this would occur to some extent without Las Positas, assuming continued population growth elsewhere in the Hospital's service area. No specific measures are proposed to mitigate this potential situation.

An additional 39 physicians would be needed to serve the Las Positas community, at buildout, and maintain the Health Systems Agency standard ratio of 1 physician per 1,148 population. It is expected that most of these could be accommodated within proposed commercial areas in the community.

The Las Positas project would also induce proportionate increases in the demand for nursing and intermediate care facilities. Again, these could be accommodated within the project.

Sources:

1. Vern Brown, Planner, Valley Memorial Hospital (telephone conversation), February, 1983.
2. Livermore-Dublin-Pleasanton telephone directory, 1982 (physician listings).
3. Alameda Contra Costa Health Systems Agency, data, 1982.

5.6 PUBLIC UTILITIES

WATER

Setting

Retail Water Supplies

The Las Positas project area is not currently within a retail water service area. Individual wells, drawing upon local groundwater sources, provide limited supplies to meet residential and agricultural needs. Characteristics of these groundwaters are discussed in Section 4.4.

Retail water service to other portions of the eastern part of the Livermore-Amador Valley is provided by the California Water Services Company (C.W.S.) and the City of Livermore Water Department. C.W.S. services approximately 13,000 connections and obtains water from its own wells and from treated South Bay Aqueduct waters purchased from Zone 7 of the Alameda County Flood Control and Water Conservation District. The City system services about 3,000 connections and receives Zone 7 water exclusively. A 14" trunkline extends into the Springtown area of Livermore, to the southeast of the Las Positas project area; a 14" line extends to the Chabot College campus, to the southwest.

Wholesale Water Supplies

Zone 7 of the Alameda County Flood Control and W.C.D. is the principal water wholesaler in the Livermore-Amador Valley. In addition to supplying the C.W.S. and City of Livermore systems, Zone 7 supplies the City of Pleasanton Water District, the Dublin-San Ramon Service District, various irrigators, wineries, golf courses, and other small independent users throughout the valley. Zone 7 currently delivers 13,000 acre-feet of treated water and 1,500-2,000 acre-feet of untreated water (for agricultural uses) to the valley.

Projected Supply and Demand

The service area of Zone 7 has three main sources of water: groundwater, captured local surface flows, and imported supplies. Zone 7 has facilities for utilizing each of these sources.

Zone 7 has two well fields - Hopyard and Mocho - for the extraction of groundwater. These well fields currently are not being used during normal water supply conditions. Zone 7 has an ongoing program for utilizing surface and imported supplies, and preserving and enhancing groundwater supplies for use during times of high demand, droughts, and emergencies.

Zone 7 has water rights permits to appropriate surplus waters of Arroyo Mocho, Arroyo Las Positas, and Arroyo Del Valle. The Alameda County Water District also has rights to supplies in Arroyo Del Valle and cooperates with Zone 7 in their development. The Arroyo Del Valle supplies are being developed as part of the multipurpose Lake Del Valle which also provides local flood control, recreation, and offstream storage for the State Water Project. Because of high costs, the Arroyo Mocho and Arroyo Las Positas supplies have not been developed and are not expected to be developed in the foreseeable future.

Zone 7 has a contract with the State for the delivery of water imported via the South Bay Aqueduct of the State Water Project (SWP). A portion of the imported supply is delivered directly to agricultural users, a portion is delivered to urban retailers after treatment, and a portion has been used for groundwater recharge.

Local retailers and water users in the Livermore-Amador Valley obtain supplies from Zone 7 and other sources. The primary local source is groundwater, which includes recharge by Zone 7.

The estimated present and projected supplies available to the Zone 7 service area are summarized in Table 5.25. The SWP supply is the full contracted for entitlement, which requires SWP facilities in addition to those currently in operation.

Table 5.25
Zone 7 Major Water Supplies with SWP Full Entitlements
(1000s of acre feet per year)

	1980	1990	2000	2010
Arroyo Del Valle	8	8	8	8
Natural Groundwater	12	12	12	12
SWP, Full Entitlement	22	32	46	46
Total	42	52	66	66

The full contracted supply would have been more assured had the voters approved Proposition 9 at June, 1982, primary elections. The voters of California did not approve Proposition 9; consequently, the state will need to identify alternative approaches to develop the necessary supplies to meet its legal obligations in water supply contracts to 30 water contractors. At the time of preparation of the current DEIR there has been no major planning to resolve this matter. However, studies have been and are under way to better assess the conditions in the Delta and the potential to convey more water through the Delta. A further delay in firming the supply will nevertheless result, and such delay will likely be two or more years (Zone 7, letter of August 6, 1982).

If the state were never to develop any new supplies, the Zone 7 area would be subject to reductions in future SWP deliveries. Table 5.26 indicates water supplies for four scenarios: 1) pro-rated entitled during the critical year of a prolonged (7 year) drought (worst case); 2) SWP deliveries for a "dry" year; 3) deliveries for a year of "average" precipitations; and 4) deliveries for a "wet" year:

Table 5.26
Zone 7 Major Water Supplies - Without Additional SWP Facilities
(1000s of acre feet per year)

	1990	2000	2010
Local Sources [1]	20.0	20.0	20.0
SWP - Critical Year[2]	15.9	20.7	20.7
Total Local and SWP	35.9	40.7	40.7
SWP - Dry Year [2]	17.9	26.8	26.8
Total Local and SWP	37.9	46.8	46.8
SWP - Average Year [2]	23.4	31.4	31.4
Total Local and SWP	42.4	52.4	51.4
SWP - Wet Year [2]	25.6	31.4	31.4
Total Local and SWP	45.6	51.4	51.4

1 Department of Water Resources, Recommended Water Management Plan for Zone 7, (November 1982).

2 Department of Water Resources, Bulletin 132-82 (November, 1982).

Zone 7 and Department of Water Resources estimates of projected water demand are indicated in Table 5.27a. Differences in estimated demands are due to Zone 7's higher population estimates and lower acreage estimates for irrigated agriculture (neither include Northbluff or Las Positas). Table 5.27b compares this projected demand to projected water supply within the Zone 7 service area with full State Water Project entitlements, and for "dry year" and "average year" conditions, supplies available without additional SWP facilities.

Table 5.27a
Estimated Water Demand
in the Livermore-Amador Valley
(1,000s of acre feet per year)

	1980	1990	2000	2010
Urban				
DWR Estimate	18.6	22.4	25.9	27.4
Zone 7 Estimate	19.7	26.6	31.0	34.5
Agricultural				
DWR Estimate	11.8	11.3	11.3	11.3
Zone 7 Estimate	3.8	5.5	7.5	7.5
	1.6	2.7	3.7	
Quarries	8.0	8.0	8.0	8.0
Totals				
DWR Estimate	38.4	41.7	45.2	46.7
Zone 7 Estimate	31.5	40.1	46.5	50.0

Source: State of California Department of Water Resources, Recommended Water Management Plan for Alameda County Flood Control and Water Conservation District, Zone 7 (November, 1982)

Table 5.27b
Projected Water Supplies and Water Demand,
With and Without Additional SWP Facilties (Without Las Positas and Northbluff
(1,000s of acre feet per year

	1990	2000	2010
Supply with			
Full SWP Entitlement	52.0	66.0	66.0
Demand (Zone 7 Estimate)	40.1	46.5	50.0
Net Surplus/Deficit	11.9	19.5	16.0
Supply - No Additional			
SWP Facilities - Critical Year	35.9	40.7	40.7
Demand	40.1	46.5	50.0
Net Surplus/Deficit	-4.2	-5.8	-9.3
Supply - No Additional			
SWP Facilities - Dry Year	37.9	46.8	46.8
Demand	40.1	46.5	50.0
Net Surplus/Deficit	-2.2	-0.3	-3.2
Supply - No Additional			
SWP Facilities - Average Year	42.3	51.4	51.4
Demand	40.1	46.5	50.0
Net Surplus/Deficit	1.9	4.9	1.4

As indicated by Table 5.27b, available water supplies would be more than sufficient to meet projected demand with full State Water Project entitlements. If the state is not able to develop any new supplies (or otherwise provide for increased deliveries to Zone 7), some water supply problems would occur, particularly during periods of drought. Water conservation efforts, greater use of ground water sources in the Livermore-Amador Valley, and possibly reuse of wastewater could partially mitigate these problems.

Water Conservation

Reductions in Valley-wide water demand could be achieved through implementation of existing as well as new water conservation programs. These are addressed in the Department of Water Resources Recommended Water Management Plan for Zone 7 (November, 1982). The Plan focuses on public education measures, water management measures, and regulations to encourage more efficient use of current water supplies. It incorporates measures currently implemented in the Zone 7 service area and adds new measures suited to the character and needs of the service area. Projected annual water savings indicated are 2,160 acre feet, in 1980; 3,920 in 2000; and 4,770 in 2010. Adjusting these estimates to account for "conserved" water which is returned to a usable water source, the Recommended Plan shows net water savings totaling 1,830 acre feet in 1990; 3,170 in 2000; and 3,940 acre feet in 2010.

Wastewater Reclamation

Historically, sewage disposal and/or use of reclaimed water in the Zone 7 area has had varying degrees of adverse impact on the quality of ground water, depending on which sub-basin is considered. In 1980 the use of reclaimed water totaled 600 acre feet and was used for maintenance of a golf course and for agriculture. This reclamation is only a small part of the approximately 10,500 ac. ft. of effluent produced by treatment facilities in the Livermore-Amador Valley almost all of which is now exported from the Valley via the LAVWMA system which transports treated waste water to San Francisco Bay. In a study by CH_2M Hill Incorporated, completed June 1981, a market assessment for future use of reclaimed waste water in the Valley indicated potential interest for landscape and agricultural irrigation uses. The potential for additional use of reclaimed waste water decreases from 7,200 acre feet in 1990 to 5,100 acre feet in 2010, reflecting the decrease in agriculture adjacent to the urban areas. This potential cannot be realized unless local water quality objectives are met. Zone 7's recently adopted waste water management plan (Wastewater Management Plan for the Unsewered, Unicorporated Area of Alameda Creek Watershed Above Niles, Camp Dresser & McKee Inc. for Zone 7, May 1982) establishes quality objectives which are stringent enough to essentially preclude the reuse of waste water treated by standard procedures; some form of demineralization would be required. The study found waste water export to be more cost effective than demineralization. The Department of Water Resources has, however, recommended that "Zone 7 encourage projects to demineralize and reuse waste water in its service area if the projects would be cost effective based on data from the Department's pilot plant (Los Banos desalting plant) and compared to the alternative of expanded export of waste water to the Bay" (Recommended Water Management Plan for . . . Zone 7, Department of Water Resources, November 1982).

Ground Water

Portions of the Livermore-Amador Valley ground water basin have sufficient water-yielding capability and quality to serve as a major water supply source and, until the SWP began deliveries to the Valley in the early 1960's, were the primary source of local supplies. The latter imported water is "softer" than local ground waters. As indicated in Table 5.27a, and under current Zone 7 policy, these imported waters will remain the primary source of water supplied by the District to municipal retailers. The District has an ongoing ground water recharge program which supplements natural recharge with excess runoff from Arroyo del Valle and, until recently, with imported SWP water. The intent of this program is to preserve and enhance ground water resources for use during times of high demand, droughts, or emergencies.

In these situations, groundwater pumping of recharged local water could be utilized to supplement available SWP water. The District estimates that 10,000 acre feet could annually be made available for this supplemental supply (Agenda Item No. 9, Alameda County Flood Control and Water Conservation District, December 15, 1983).

Major Treatment and Distribution Facilities

In the Livermore area, South Bay Aqueduct water is treated in two Zone 7 treatment plants: Patterson Treatment Plant, east of the city, and Del Valle Water Treatment Plant to the south. The Patterson Plant has a sustained flow capacity for approximately 9 million gallons per day (mgd). The Del Valle Plant has a capacity of 18 mgd. Both facilities are operating near capacity - Patterson near 90 percent, Del Valle near 80 percent of existing capacity. Zone 7 is currently considering plans to expand these facilities in 1987-88 to accommodate normal (planned) growth within its service area.

The Zone's two major transmission lines are the 36" Cross Valley Pipeline and the 24"/27" Livermore Pipeline. The Cross Valley Pipeline extends from the Del Valle Treatment Plant to serve a portion of Livermore and consumers in Pleasanton and Dublin; the facility currently operates at approximately 80 percent of its 18 mdg capacity, with end pressures of 50 psi. The Livermore Pipeline carries treated waters from the Patterson Plant to consumers in Livermore; it currently operates near 90 percent of its 9 mgd capacity. An 18" Vasco Pipeline extends from the Livermore Pipeline to the Springtown area and is the facility closest to the Las Positas project area. Expansion of the treatment plants would require installation of parallel pipelines in order to maintain current end water pressures.

Both the Patterson Pass and Del Valle Water Treatment Plants are used to nearly their capacities. Based on projections of water demand within the existing service areas, additional treatment capacity at either of these plants wll be needed by 1987-88. In addition to treatment capacity needs, the distribution system would also have to be improved. The planned expansion will accommodate additional demand to the extent of its capacity until enlarged further.

Las Positas Potable Water Supply Proposal

The Las Positas proposal call for two water distribution systems. The potable water supply system is discussed in the current section. The second system providing for landscaping irrigation applications of treated wastewater is discussed in Section 5.6.2.

It is proposed that potable supply service to the Las Positas development be provided through a County Service Area. Creation of the supply system would include installation of supply transmission pipelines, distribution mains, booster pumps and storage facilities. Estimated requirements at buildout would be 8.0 million gallons (mg) per day (average consumption) plus 5.0 mg for fire flow at a rate of 8,000 gpm for 10 hours (see Figure 2.8, Las Positas Water Supply System). This projected average daily consumption translates into approximately 20 mg per day peak demand.

It is proposed that the supply transmission lines (2.56 miles of 24" pipe and 2.84 miles of 18" pipe) be connected to the existing major transmission lines owned and operated by Zone 7, namely: the 36" Cross-Valley Pipeline (supplied by Del Valle Treatment Plant) and the 18" Vasco Pipeline (supplied by Patterson Treatment Plant). Because of the considerable distance of the project's distribution main from the source, it is proposed that a series of 2,500 gpm booster pumps would be provided for each development phase.

Assuming that the wholesale water supplied by Zone 7 would already be satisfactorily treated, a separate water treatment facility for the project would not be required.

It is proposed that each of project Phases I, II and IV will have a 3.6 mg storage tank, with a 3.0 mg tank for Phase III. A total 13.5 mg storage would be required for project completion. These tanks would be located off-site at elevations suitable to achieve required pressures. The proposed location of these tanks is shown in Figure 2.8.

Pipe sizes of the systems distribution mains vary from 12" to 18" diameters. Lengths by phase are summarized below.

	Pipe Length L.F.	No. of Fire Hydrants (ea.)
Phase I	25,000	83
Phase II	32,500	108
Phase III	20,300	68
Phase IV	28,700	96
TOTAL:	106,500 or 20 miles	355 ea.

Except for main supply transmission lines and booster pumps which would be installed prior to Phase I, the water distribution system would be installed simultaneously with each development phase.

Distribution mains would be installed within road rights-of-way; it would be necessary to acquire 8.0 acres for the storage tanks and approximately 20.0 acres outside the project area for the supply transmission line easements.

Impacts and Mitigation

Organization and Responsibilities - Impacts, Mitigation, Alternatives

The proposed Las Positas development would require an adequate water supply and a new, public water system. The proposed mechanism is the establishment of a County Service Area, under the Board of Supervisors, to provide for the design, installation, operation and maintenance of the retail water system within the Las Positas area, and for contracts between the CSA and Zone 7 for wholesale deliveries of treated water. The CSA would also assume responsibilities for related utilities, including wastewater collection and treatment, wastewater reuse for irrigation and maintenance of open spaces used for applied irrigation, and for groundwater management within the project area.

Establishment of the County Service Area would primarily impact the County, and in particular, the Board of Supervisors which would be required to assume new responsibilities for governance to the Las Positas community above that and significantly different in kind from its current duties. These impacts on the County and the Board of Supervisors are discussed further in section 5.8.

The contractual arrangements with Zone 7 for wholesale supply of potable water would be similar to those arrangements now in effect with other water retailers in the Livermore-Amador Valley, and should not require any significant adjustments in the organization or administrative operations of the District.

The public water system must be designed and constructed, and must be maintained and operated to ensure a constant and adequate supply of potable running water to the community. This would be assured through normal requirements for system conformance with all applicable codes, statutes and standards of the County and other responsible local, state and federal agencies.

Formation of the CSA would require approval by the Alameda County Local Agency Formation/Commission which would also consider alternative governmental mechanisms for water supply and other services to the Las Positas development. Alternatives addressed in the current section include the California Water Service Company, which now serves portions of the City of Livermore, including the Springtown area, and Zone 7. Other alternatives, including annexation to the City of Livermore, a Community Sevices District, etc., are generally evaluated in Section 7.0.

Obtaining potable water service from the California Water Service Company could allow for certain efficiencies in the use of the Company's existing distribution facilities. However, CWSC has experience with water service only and could not be expected to assume other service responsibilities to Las Positas. Delegation of water supply responsibilities to CWSC, and of other service responsibilities to the CSA (or CDS, etc.) would not result in any significant

efficiencies in the provision of services to Las Positas, particularly as the CSA would ultimately be responsible for, and would be required to have the necessary expertise to effectively oversee the installation and operation of all infrastructure in Las Positas. This alternative would also be contrary to the reasonable objective that a single entity manage the complex and interrelated system of public utilities (eg. water delivery, treatment, reuse, open space maintenance).

The alternative that Zone 7 manage these services would have merit, although currently the Zone does not manage wastewater treatment facilities, or provide direct retailing of potable water.

Because the Zone is involved in both water supply (wholesale) and in groundwater management, its involvement would be logical from the standpoint that wastewater reuse, water supply and ground water effects are so interrelated, and, again, management by a single entity (in this case Zone 7) could result in the best overall success. The Zone is legally empowered to, but has not become directly involved in water retailing to urban development or in the operation of wastewater collection and treatment facilities. An adjustment in Zone 7 policy would probably be required before it could do so for Las Positas or for other existing or future development in the Valley.

Supply and Demand - Impacts and Mitigation

It is estimated that water demand in the Las Positas development would, at buildout, range between 7,300 and 9,000 acre feet per year, assuming average per capita rates of between 145 and 176 gallons per day [1]. For the current analysis it is assumed that this projected demand excludes the effects of water conservation and on-site wastewater reuse.

With full State Water Project entitlements to Zone 7 the available water supply would be more than sufficient to accommodate the additional demand from Las Positas, as well as that from the nearby "Northbluff" development. Without additional SWP facilities total demand in the service area, including the projects would exceed projected demand in all cases (critical year, dry year, average year).

As was indicated in Table 5.27b, net deficits in water supplies (excluding conservation or additional use of ground water) would also occur during "critical" and "dry" years without the two projects. These deficits are considerably smaller than would occur with the addition of demand from Las Positas and Northbluff and, according to Zone 7, could be dealt with through a combination of water conservation measures and additional withdrawals from ground water resources during dry and critical years.

[1] Base per capita use (gallons per day) factors (excluding water conservation) used in preparation of the Recommended Water Management Plan for Alameda County Flood Control and Water Conservation District, Zone 7, DWR, November 1982, are as follows:

Year	1990	2000	2010
Alameda Zone 7	158	158	158
Livermore	153	153	153
Pleasanton	171	171	171
Dublin/San Ramon	161	161	161
Cal Water	145	145	145

Preliminary data for Bulletin 166-3, Urban Water Use, California Department of Water Resources, show the following 1971-75 (pre-drought) and 1978-81 (post-drought) averages for valley water agencies.

	1971-75	1978-81
Livermore	NA	158
Pleasanton	176	165
Dublin/San Ramon	166	145
Cal Water	150	148

Table 5.27c
Water Supply and Water Demand:
With and Without Additional SWP Facilities;
With Las Positas & Northbluff Projects 1/
(100s of acre feet per year)

	1990	2000	2010
Supply - with full SWP entitlements	52	66	66
Demand with projects	42.1-42.6	52.3-53.8	58.0-59.5
Net Surplus/Deficit	9.4-9.9	12.2-13.7	6.5-8.0
Supply - no additional SWP facilities "critical" year	35.9	40.7	40.7
Demand with projects	42.1-42.6	52.3-53.8	58.0-59.5
Net Surplus/Deficit	-6.2--6.7	-11.6--13.1	-17.3--18.8
Supply - no additional SWP facilities "dry" year	37.9	46.8	46.8
Demand with projects	42.1 - 42.6	52.3 - 53.8	58.0 - 59.5
Net Surplus/Deficit	-4.2--4.7	-5.5--7.0	-11.2--12.7
Supply - no additional SWP facilities "average" year	42.4	51.4	51.4
Demand with projects	42.1-42.6	52.3-53.8	58.0-59.5
Net Surplus/Deficit	0.3--0.2	0.9--2.4	-6.6--8.1

1/Assumptions for Las Positas are: ultimate, year 2005, demand of 7,500 (low) to 9,000 (high) acre feet per year; equal annual increases in demand of 375 (low) to 450 (high) acre feet per year, beginning in 1985.

Assumptions for Northbluff are: ultimate, 1995, demand of 500 acre feet per year; equal annual increases in demand of 50 acre feet per year, beginning in 1985. Zone 7 estimate, from Table 5.27c is used for other Livermore-Amador Valley demand.

Given current uncertainities regarding future SWP entitlements to Zone 7, mitigation of potential impacts may be achieved through 1) a delay in actions by the County on the proposed Plan amendment and rezoning; or 2) a conditioning of these actions to delay any further implementing actions by the County until such time as necessary State studies are completed, the status of SWP entitlements clarified, and the determination made that an adequate water supply can be assured to the project with no reductions in future required deliveries to existing retail contractors in the Valley and consistent with Zone 7 objectives regarding the use of both imported and ground water sources.

Some reduction in projected water demand from Las Positas would result from the proposed use of treated wastewater for irrigation of landscaped areas, through the implementation of water conservation measures, and, if permitted, by the use of treated groundwater. The net savings of these are not estimated at this time, but would probably not exceed 5000 acre feet per year. These savings would not be sufficient to offset potential deficits if no new SWP facilities are developed.

Wastewater Reuse

At ultimate treatment plant flow of 5.0 mgd (4.55 mgd after brine disposal) a total of approximately 5000 acre feet per year of treated wastewater would be available for landscaping irrigation. This would be used to irrigate approximately 1,470 acres, including 865 acres of parks and open space, approximately 315 acres on public and institutional areas, 167 acres within detached residential areas, 81 acres within multi-family areas, 10 acres within commercial areas, 136 acres within employment areas, and 26 acres along major arterial routes. The net effect of the use of reclaimed water for irrigation is not determined at this time. While significant, it would be less than the full 4.5 acre feet per year used given that the Las Positas development includes a very extensive system of open space and landscaped areas in order to allow for full, onsite use of generated wastewater. This would not be the case in other communities in the Livermore-Amador Valley.

Water Conservation Measures

Effective implementation of water conservation measures could result in an eight percent reduction in water demand from urban uses in Las Positas. (Assuming ultimate demand of 7,500 acre foot per year (low) this is approximately 600 acre foot per year; assuming demand of 9,000 acre foot, the reduction is approximately 720 acre foot per year). This rate of reduction would be equivalent to Department of Water Resources (adjusted) projected annual water savings for the remainder of the Zone 7 service area (without Las Positas), and could be higher than the Valley-wide average given the potential for application of both existing and possibly more stringent water-conservation requirements to the new development.

Use of Treated Groundwater

The project includes a proposal for collection and demineralization of area groundwater, in order to lower groundwater levels within portions of the site, and in order to limit the flow of poorer quality groundwaters from the project area. Preliminary rough calculations indicate that ultimately approximately 610 acre feet per year would be extracted. It is not known at this time whether these demineralized groundwaters would be permitted to be placed into the potable system. Further hydrogeological studies would be needed in order to make this determination.

Major Water Treatment and Distribution Facilities - Impacts and Mitigation

As indicated, planned expansion of Zone 7's water treatment plants and distribution system will accommodate additional demand to the extent of its capacity until enlarged further. It is possible that some of the water supply needs for the proposed Las Positas development could be served with such an expansion. Whether it is from the proposed Las Positas development or other developments, increased demands over current projections will necessitate earlier system expansion.

Zone 7's water program includes a capital fund to finance needed expansion, improvements and replacement; the source of revenues for this fund is connection charges and a replacement allowance from water sales. If Las Positas were to be served from the Zone 7 water system, connection charges would be collected to pay for needed expansion of the treatment plants and major distribution pipelines. If the capital fund is short when needed, it may be necessary for the developers to pay connection charges in advance. Separate from enlargement of the Zone's facilities are the needed distribution and storage facilities for the development itself; costs of that system would have to be borne by the development.

WASTEWATER TREATMENT AND DISPOSAL

SETTING

The Las Positas project area is not presently in a sewer service area. The nearest sewer trunk lines are in the City of Livermore, in the Springtown area to the east, and at Chabot College to the west of the project area. Use of these facilities, and of the City of Livermore's wastewater treatment plant, to the south of I-580 freeway, would not be possible except through annexation of the Las Positas area to the City.

Existing wastewater treatment facilities within other parts of the Livermore-Amador Valley are provided by the City of Livermore and the Dublin San Ramon Services District (DSRSD), which serves the City of Pleasanton and the recently incorporated area of Dublin and unincorporated area of San Ramon in Contra Costa County. Completion of expansion, now underway at both plants, will bring capacities to approximately 6.5 mgd and 9.0 mgd for Livermore and DSRSD, respectively. Both plants use an activated sludge process to provide secondary level treatment for discharge into the LAVWMA export pipeline and transmission to EBDA with disposal to the deep waters of the San Francisco Bay. Prior to the export line, both plants operated filters and discharged effluent to adjacent streams tributary to the Alameda Creek Watershed. The LAVWMA export pipeline was constructed to eliminate these discharges. DSRSD has discontinued use of its filters while Livermore is still using theirs as part of their reclamation program.

Elimination of the stream discharges resulted over concerns about salts, nitrates and organic materials reaching the Niles cone as well as the groundwaters in the Livermore-Amador Valley. None of the treatment process used at DSRSD or Livermore removed any of these constituents of concern.

Two additional marginal treatment facilities are currently in operation in the Valley serving the Castlewood Country Club area near Pleasanton and the Veterans Hospital south of Livermore. Both are scheduled for replacement soon.

Wastewater Management Alternatives

The Livermore-Amador Valley area has a long history of evaluation of wastewater reclamation/disposal alternatives. In a 1976 project report, the Livermore-Amador Valley Water Management Agency (LAVWMA) investigated various disposal alternatives including export to the San Francisco Bay and reclamation within the Valley. The recommendation to export to the Bay via a pipeline was later confirmed in another report by LAVWMA in 1977, thus resulting in construction of the LAVWMA export pipeline which began operation in early 1980. The capacity of the export facilities was designed to accommodate only limited growth within service areas of LAVWMA member agencies (i.e., Cities of Pleasanton and Livermore, and the Dublin San Ramon Services District -DSRSD).

Zone 7 has recently undertaken a study to evaluate wastewater management in the Livermore-Amador Valley area as a function of groundwater protection. Zone 7 is concerned that "discrete" wastewater reclamation/disposal systems, which are likely to be proposed in unincorporated areas (thus not entitled to current export pipeline disposal), not impact the beneficial uses of the groundwater. An interim report prepared in September, 1981, and an addendum in November presents alternatives and preliminary costs for future wastewater management. A comparison of the preliminary cost estimates prepared by Zone 7 and those prepared for Las Positas is presented in the conceptual Wastewater Management Plan Technical Report(under separate cover).

The following possible alternatives for the Las Positas project are briefly discussed in this section.

- Export Pipeline
- Salt Routing Reservoir
- Groundwater Recharge
- Evaporation
- Evapotranspiration Systems
- Reclamation and Reuse
- Alternatives

Export Pipeline

The Zone 7 study evaluates a possible additional export pipeline. While preliminary cost comparisons for a pipeline vs. demineralization appear to favor export, major institutional hurdles remain. Obtaining additional capacity in the East Bay Dischargers Authority (EBDA) system represents the first step. If EBDA either cannot or is unwilling to accommodate additional flows from the Livermore/Amador Valley, another pipeline would appear doubtful. If capacity in the EBDA system is developable, there would still remain major institutional arrangements between the valley agencies. Another export pipeline would likely be sized larger than the needs of Las Positas and thus be a regional project probably coordinated with all LAVWMA agencies.

Unknown questions regarding the implementability of such a parallel export pipeline make it difficult to assess its feasibility in the context of this report.

Ongoing considerations regarding available capacity in the EBDA system as well as of appropriate institutional arrangements may result in a favorable determination regarding a second export pipeline. With another pipeline, project connection to the Livermore treatment plant might also be possible.

Salt-Routing Reservoir

The alternative to construct an effluent reservoir to store summer wastewater for wet weather discharge is included in the Basin Plan and more recently mentioned in the Zone 7 study. This alternative was previously evaluated in other reports along with the export pipeline, but difficulties in locating a suitable site have precluded implementation. Any salt-routing reservoir project should also be implemented on a more regional basis rather than specifically for one development. Therefore, further consideration of this alternative is not included in this report.

Groundwater Recharge

Zone 7 has adopted a policy which has the objective of not allowing any increase in TDS in the main groundwater basins resulting from wastewater land application. To preclude any incremental increase would require demineralization. A recharged demineralized effluent could actually reduce the TDS concentrations. Suitable recharge sites are not located near the proposed project, thus requiring a pipeline. Zone 7 would be logical agency to implement such a program.

The Zone 7 study points out that there may be a limitation as to the volume of wastewater which could be recharged into the potable groundwater. Further evaluation may be appropriate at a later time but will not be evaluated in this report.

Direct Stream Discharge

Discharge of treated wastewater into a non-tidal stream is prohibited in the San Francisco Bay Regional Basin Plan. Further, the construction of the LAVWMA export pipeline had as its major objective the elimination of stream discharges from the Livermore Water Reclamation Plant and the Dublin San Ramon Services District Plant. Even with demineralization, an exemption would be required from the Regional Water Quality Control Board's Basin Plant to allow dry weather discharges. With demineralization, water quality should be excellent and actually be of beneficial use to the creek.

The RWQCB has established some precedent for allowing discharge into the Alameda Creek Watershed. In May, 1980, a one-year permit was granted to the General Electric Vallecitos Nuclear Facility for discharge of cooling water. The California Department of Fish and Game has supported discharge and further proposed discharge to increase the environmental benefits. Studies identifying the benefits of stream flow augmentation were prepared as a part of the GE discharge application and might be applicable in the current instance if stream discharge is pursued. Discharge of high quality demineralized effluent probably could also be demonstrated to be beneficial for stream augmentation. The RWQCB will be amending its Basin Plan within the next 6-12 months and is currently considering the possibility of stream discharges. An exception to the Basin Plan is conceivable, although for the current report, such an exemption is considered unlikely for the Las Positas proposal.

Evaporation

Evaporation of treated wastewater from Las Positas would accomplish all Basin Plan water quality objectives and meet local policy criteria. Sealed ponds would eliminate percolation to the groundwater. Salt residue would be hauled to a solid waste disposal site. However, land area requirements (approximately 1,600 acres) for evaporation make the use of this alternative unlikely for the subject project.

Evapotranspiration Systems

Evapotranspiration (ET) systems consist of applying water to a vegetated area at such a rate that the water would be released to the atmosphere through the process of evapotranspiration. Sufficient application rates are necessary to assure sufficient leaching below the root zone and prevent salt build-up within the soil. ET systems can be landscaped irrigation, agricultural irrigation, irrigated pasture, simple spray disposal or creation of an artifical marsh.

Irrigation of reclaimed water is viable but because of Zone 7 policy limiting land application of wastewater to a maximum of 250 mg/l of total dissolved solids (TDS), demineralization is required.

Reclamation and Reuse

This alternative differs from an ET system primarily in the size of use area. ET systems are generally located in large areas or clusters which accomplish reclamation/disposal in a central area. The concept proposed under this alternative would allow irrigation of parks, playgrounds, school yards, median strips and other uses within the development.

The total reclaimed water generated and available for reuse would be approximately 5,100 acre feet per year. As irrigation uses vary throughout the year, winter storage would be essential to annually balance the demands.

It appears that reclamation is feasible and could be implemented. The following section further discusses the concepts and identifies the requirements for development of a wastewater management plan using a dual water system for reuse.

Wastewater Management Proposal - Las Positas Project

The conceptual wastewater management plan for the proposed Las Positas development consists of on-site treatment and reuse in the form of landscape irrigation. This would involve the construction of a wastewater reclamation plant and the installation of two parallel water piping systems, one of which distributes tertiary treated wastewater for irrigation purposes, and a potable water system for other water needs. In addition, a groundwater collection and treatment system is proposed to limit the flow of groundwater into the basin to the south of the Las Positas project area.

Summary of Applicable Regulatory Requirements - Las Positas Wastewater Management Proposal

Proposal

Any discrete treatment plan proposed for construction must satisfy the requirements of the Regional Water Quality Control Board (RWQCB), the State Department of Health (DOH), and Zone 7.

RWQCB must issue discharge requirements for any treatment facility in the San Francisco Bay area. In issuing these requirements they refer the proposed project for review by other interested agencies. RWQCB incorporates into the discharge requirements standards set by DOH regarding irrigation using sewage effluent and disinfection levels.

State Department of Health requirements for the treatment and reclamation of wastewater are contained in Title 22, Division 4 of the California Administrative Code (Title 22). Title 22 contains two basic categories of requirements. The first category lists required standards of treatment and permissible bacteria levels for various reclaimed water uses. The second category of requirements is directed toward establishing a high degree of reliability in the design of wastewater reclamation facilities.

Concerning this first category of regulations, Title 22 lists the following requirements applicable to the proposed landscape irrigation operation using reclaimed water:

> 60313. Landscape Irrigation. (b) Reclaimed water used for the irrigation of parks, playgrounds, schoolyards, and other areas where the public has similar access or exposure shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater or a wastewater treated by a sequence of unit processes that will assure an equivalent degree of treatment and reliability. The wastewater shall be considered adequately disinfected if the median number of coliform organisms does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of coliform organisms does not exceed 23 per 100 milliliters in any sample.

Title 22 bacteriological effluent quality requirements are enforced both by the State Department of Health and by the California Regional Water Quality Control Board, (Regional Board).

The second category of Title 22 regulations contains several general requirements for the design of wastewater reclamation plants. One such requirement is that the plan be designed for flexibility so that a high degree of treatment can be achieved in varying devices; alarms are required to alert plant operators of power supply failure or failure of any treatment plan unit processes. A third general design requirement is that, in the event of a power failure, the plant be provided with either automatically actuated short-term or long-term storage or disposal provisions or a standby power source.

The second category of Title 22 regulations also contains requirements for process reliability within the treatment plant. With respect to primary treatment, biological treatment, secondary sedimentation, coagulation, filtration and disinfection, a minimum of one of the following reliable features must be provided:

a) Alarms and multiple treatment units capable of handling the entire plant flow with one unit out of service.

b) Alarms, with short-term retention or disposal, provisions, and standby replacement equipment.

c) Alarms and long-term storage or disposal provision.

d) Automatically actuated long-term storage or disposal provisions.

Table 5.28 summarizes the requirements contained in Title 22 regulations.

The Regional Water Quality Control Board will also require that, if the proposed treatment facility is constructed, it must be owned, operated, and maintained by a public sewering agency.

TABLE 5.28

SUMMARY OF TITLE 22 REQUIREMENTS

Article 1	- Definitions	
Article 2	- Irrigation of Food Crops	2.2/100 median, 23/100 once/30 days coagulated, clarified, filtered (2 turbidity units)
	Surface Irrigation	2.2/100 median - oxidized
	Orchards & Vineyards	Primary, no coliform
Article 3	- Irrigation of Fodder, Filter, Seed Crops	Primary
	Pasture for milking animals	23/100 median - oxidized
Article 4	- Landscape Irrigation (Public Access) Golf Courses, cemeteries, freeways	23/100 median - oxidized
	Lawns, parks & playgrounds	2.2/100 median, 23/100 once/30 days - coagulated, clarified, filtered (2 turbidity units)
Article 5	- Recreational Impoundments, Non-Restricted recreational impoundments (swimming)	2.2/100 median, 23/100 once/30 days - coagulated, clarified, filtered (2 turbidity units)
	Restricted Recreational Impoundments (fishing, boating)	2.2/100 median - oxidized
	Landscape Impoundment (no public contact)	23/100 median - oxidized
Article 6	- Sampling & Analysis	Established general monitoring requirements.

TABLE 5.28 Continued

	Groundwater Recharge	Reviewed on case-by-case basis. Probable treatment same as for nonrestricted recreational impoundment plus carbon absorption and possible demineralization.
Article 7	- Engineering & Report Operational Requirements	Requires Engineering Report and established general operating requirements for personnel, maintenance, records and reports.
Article 8	- Design Requirements	Establishes general design requirements for flexibility, alarms, and power.
Article 9	- Alternative Reliability Requirements for uses permitting primary effluent	Establishes reliability requirements for multiple treatment units and storage for primary treated effluent.
Article 10	- Alternative Reliability Requirements for uses requiring oxidized, disinfected wastewater or oxidized, coagulated, clarified, filtered, disinfected wastewater	Established reliability requirements for highly treated and reused effluents. Reliability requirements for: emergency storage or disposal, primary treatment, biological treatment, secondary sedimentation, coagulation, filtration, and disinfection.
Article 11	- Other Methods of Treatment	Allows for alternative methods if equal degree of treatment and reliability can be demonstrated.

Objectives pertaining to groundwater quality in the proposed Las Positas project area and elsewhere in the Livermore-Amador Valley are set by Zone 7.

The major contaminants that are of concern are total dissolved solids (TDS) and nitrates. TDS and nitrates are singled out for discussion because these two water quality characteristics are the parameters of concern expressed in Table 3, "Groundwater Quality Objectives - Alameda Creek Watershed Above Niles" of Zone 7's wastewater management plan for unsewered, unincorporated areas. TDS is a generic term and a control of this characteristic leads to a commensurate degree of control of a variety of mineral salts. The quality of reclaimed water to be used for irrigation in the Las Positas area must conform to Zone 7's 250 mg/l TDS water quality objective and to all other applicable water quality objectives of Zone 7 and the Regional Water Quality Control Board.

Zone 7 policy has been adopted in conjunction with the Water Quality Control Board San Francisco Basin (2) of the San Francisco Bay Regional Water Control Board. Table 3-2 of that Plan contains concetration limits for the following constituents in groundwaters used for municipal or agricultural supply: Aluminum, arsenic, barium, beryllium, boron, chloride, cadmium, chromium, cobalt, copper, cyanide, fluoride, iron, lead, lithium, manganese, mercury, molybdenum, nickel, NO3 plus NO2, pH, selenium, silver, sodium absorption ratio, sulphate, vanadium, zinc, MBAS, oil and grease, phenols, trihalomethanes, endrin, Lindane, methoxychlor, toxaphene, 2,4-D, 2,4,4 DP Silvex, bacteriological properties and radioactivity.

Waste discharge requirements adopted by the Regional Water Quality Control Board to regulate reclamation in the Livermore-Amador Valley take into account the constituents of concern listed in the water quality objectives. Reclamation activity must comply with its waste discharge requirements and provide the proper degree of removal of contaminants of concern.

Table 3-2 of the Basin Plan covers the constituents listed in Tables 2, 3, 4, 5, 6 and 7 of Chapter 15, Title 22, California Administrative Code. In complying with waste discharge requirements, the project would also meet the standards expressed for acceptability of drinking water in the State Department of Health Services domestic water quality regulations, as the limiting concentrations expressed in the above water quality objectives are identical to the Department standards.

Zone 7's local area policy for the Las Positas Valley also addresses groundwater displacement, a phenomenon which might occur regardless of reclaimed water quality and which could be caused by use of potable water for irrigation: "any significant rise in water levels could force water into Arroyo Las Positas... This problem must be carefuly considered in connection with disposal of wastewater in this area."

Anticipated Reclamation Criteria and Constraints

The following list of criteria and constraints are anticipated to be required by the Regional Water Quality Control Board, Zone 7 and the DOH.

a) The irrigation area must be completely described to the RWQCB and it must be shown that the area is sufficient to handle the entire quantity of plant effluent.

b) Inclement weather storage ponds must be provided to hold plant effluent during those times of the year when irrigation cannot be practiced. Typically the volume required is approximately 90 days of plant flow. The dissolved oxygen concentration in requirements for pond is expected to be less than 2 mg/l.

c) A contractual agreement must exist between the reclaimed water producer and the reclaimed water users to guarantee a means of effluent disposal.

d) No discharge of inadequately treated effluent will be allowed.

e) Reclaimed water must be strictly confined to reuse area.

f) The treatment plant and the plant effluent must meet the appropriate requirements contained in the Title 22 regulations.

g) Reclamation facilities must be protected from the 100 year flood.

h) All reclamation operations will be the direct responsibility of the operators of the treatment plant.

i) An engineering report must be filed in accordance with Title 22 regulations.

Wastewater Management System Design - Las Positas Wastewater Management Proposal

The system proposed for Las Positas is shown in Figure 2.6. This system would include the features listed in Table 5.29. A wastewater reclamation plant would be constructed and two parallel piping systems installed. One system would distribute tertiary treated wastewater for irrigation purposes and the other would be a potable water system for other water needs. Normal secondary treatment facilities would be provided in accordance with RWQCB requirements. The effluent would be demineralized so as to provide a low TDS content for irrigation of landscaping and greenbelt areas. The effluent would be subjected to coagulation, clarification and filtration treatment as required by State Department of Health regulations. Finally, disinfection by chlorinization would be provided to meet the disinfection criteria established by the State Department of Health. *

* Activated carbon treatment (filtration) is not considered necessary to meet anticipated waste discharge requirements for the irrigation operation. This process would need to be considered if direct recharge of reclaimed water of the central basin was proposed.

All of the proposed facilities would need to be designed in accordance with conservative engineering standards so as to prevent discharge of treated effluent to surface waters either through overflow from storage areas or by over application of irrigation water. Adequate redundant units would be provided to maintain a minimal level of treatment in the event of an equipment breakdown. Standby power would be provided to permit operation during periods of power outage and such other safeguards as may be deemed appropriate would be included in the system.

TABLE 5.29a
PROPOSED TREATMENT AND DISPOSAL FACILITIES

1. Preliminary Treatment

   A. Coarse Bar Racks
   B. Influent Pumps (if required)
   C. Comminuting Device
   D. Meter
   E. Grit Removal

2. Secondary Treatment

   A. Primary Sedimentation
   B. Activated Sludge Tanks
   C. Aeration Equipment
   D. Secondary Sedimentation Tanks
   E. Sludge Collection Facilities
   F. Skimmer
   G. Return Activiated Sludge Pumps

3. Filtration

   A. Chemical Feed
   B. Floculation Tank
   C. Flow Equalization
   D. Filter Pump Station
   E. Primary Filters
   F. Secondary Filters

4. Disinfection

   A. Chlorinators (twin units)
   B. Chlorine Feeding Equipment
   C. Safety Equipment
   D. Chlorine Contact Tank

5. Sludge Handling

   A. Waste Activated Sludge Pumps
   B. Sludge Digester
   C. Sludge Drying Beds

6. Demineralization

   A. Pumps
   B. Reverse Osmosis Unit (Option I only)
   C. Brine Disposal Pipeline

7. Spray Disposal

   A. Effluent Pumps
   B. Meter
   C. Storage Reservoir
   D. Distribution Piping
   E. Irrigation Pumping
   F. Monitoring Devices

8. Other Facilities

   A. Stand-by Generator
   B. Laboratory
   C. Alarm Signals
   D. Office and Workshop

In order to permit irrigation to take place in accordance with the needs of plant growth, it would be necessary to provide a substantial storage volume to hold flows during wet periods when irrigation cannot be practiced. Experience elsewhere indicates that the size of these storage facilities should be large enough to accommodate approximately 90 days flow. In this case, this would amount to between 1,260 and 1,940 acre-feet at an ultimate plant flow of 5.0 mgd (4.55 mgd after brine disposal). Because it is proposed that the project be developed in roughly four equal five-year phases, the facility would be constructed to suit the requirements by phase. However, the initial 0.50 mgd facility would also be constructed prior to Phase I. The subsequent buildout of the facility will also be done in the same manner. The wastewater treatment plant would be sited on 20 acres in the southwestern corner of the town. Figure 2.6 illustrates the location of the proposed plant and the backbone collection system.

Once the wastewater is collected and treated at the plant, it would be pumped through the irrigation piping system. Treated wastewater would be delivered to either seasonal storage ponds located throughout the development within the open space system or directly to public sites, open and common areas, and landscaped areas along major streets for direct irrigation. The seasonal storage ponds would be capable of holding 90 days of treatment flow. They would be most full during wet weather periods.

Reverse Osmosis (Demineralization)

Demineralization would be provided by a reverse osmosis (R.O.) system which would lower the total dissolved solids (TDS) in the plant effluent from approximately 500 mg/l to 250 mg/l. Since complete demineralization is not required, only a portion of the plant flow would need to be demineralized. This demineralized flow, with a TDS of approximately 50 mg/l would be blended with R.O. bypass flow (at 500 mg/l) to produce a combined TDS of 250 mg/l.

The proposed R.O. system would consist of the following components:

(1) Low lift pump to provide pressure through cartridge filters

(2) pH adjustment and threshold inhibitor including tanks, chemical feed equipment and instrumentation.

(3) Cartridge filters

(4) Ultraviolet disinfection

(5) High pressure feed pumps - including control valves, piping and instrumentation to monitor pressure, pressure differential, conductivity, pH, etc.

(6) R.O. units

(7) Degasification equipment to strip carbon dioxide.

The criteria used for selecting the R.O. system included providing a modular system, sized so that the system could adequately treat the appropriate portion of the plant flow with one unit not in service. This additional unit provides additional system flexibility in that if unusually high TDS levels occur in the plant influent the additional unit can be run. It is anticipated that discharge requirements would consider compliance based on mass salt discharges over annual or quarterly periods to allow flexibility in operation. Standby pumping capacity would be provided for pressurization of the modules so that any single pump could be taken out of service for maintenance and repairs without reducing capacity of the demineralization system.

Such redundancies are intended to ensure that the reverse osmosis plant would be capable of functioning virtually 100 percent of the time. In the event that the entire demineralization system must be shut down temporarily, this redundant capacity would also serve to rectify the reclamation system's temporary inability to meet TDS water quality objectives. During suspension of demineralization, filtered, disinfected secondary effluent would be used for irrigation. Following resumption of reverse osmosis, all modules of the reverse osmosis system would be placed in operation to produce a reclaimed water with salinity less than 250 mg/l TDS. After removal of salt equivalent to the excess applied to the land during suspension of reverse osmosis, the reverse osmosis units would resume routine operation.

Two other contingencies may contribute to malfunction of the reverse osmosis demineralization system: 1) malfunction of the secondary treatment process, and 2) power failure. The secondary treatment process would be designed in accordance with the reliability provisions of Chapter 3, Division 4, Title 22 of the California Administrative Code. Standby power, duplicate processing units and alarms would minimize the possiblity of secondary treatment breakdown. The pretreatment system associated with the reverse osmosis process would also be fairly tolerant of non-specification secondary effluent which might be encountered as a result of problems with the secondary treatment process.

The reverse osmosis system would automatically suspend operation during any power outage. Standby power would be provided for secondary treatment. As power outages are typically of short duration, system design would probably incorporate secondary effluent storage prior to reverse osmosis, which could function both for flow equalization purposes and emergency storage during power outages.

Operation of an R.O. system produces a quantity of highly saline brine which must be disposed. The proposed method of disposal of the approximately 0.45 mgd of brine generated at the Las Positas facility (at ultimate plant capacity of 5.0 mgd) is evaporation in shallow ponds at a site within the proposed development.

At full design flow of 5 MGD, the reclaimed water system will accumulate mineral solids at the rate of approximately 3,000 tons per year (dry weight). These solids will primarily consist of the increment of salts added in households as a consequence of normal water use, plus a decrement of the potable water supply salinity. The accumulated solids must be periodically removed for disposal in a manner conforming to the Regional Water Quality Control Board requirements. This may be done by deposit in a Class I landfill or by discharge through an existing outfall into saline bay or ocean waters. Given the scarcity of Class I sites in California and the need for these sites for disposal of toxic and hazadous wastes, it would be preferable to dispose of the waste brine as a concentrate, rather than a solid. Approximately one tank truck load per working day would have to be hauled to a convenient bay or ocean outfall for discharge in the liquid state. This volume would have a negligible impact on the hydraulic capacity of the outfall; the effect upon salinity of saline receiving waters would also be minor, since it is anticipated that the discharge would be mingled with a large volume of effluent originating from fresh water sources. (If capacity were made available in the LAVWMA/EBDA export system for the small volume of brine concentrate, a pipeline connection to the outfall facilities could be installed. As the project has not committed capacity in the existing export facilities, this alternative has not been pursued).

Reverse Osmosis (R.O.) has been used on municipal wastewater at three locations in California. The largest and most successful application is at the Orange County Water Districts' Water Factory 21. [1] WF-21 is a 5.0 mgd reverse osmosis facility which has been in operation for approximately six years. The Ramona Municipal Water District operates an 0.225 mgd wastewater reclamation and reverse osmosis plant at the San Diego Country Estates development in San Diego County. This plant has been in operation since January, 1975. The third plant is located at Kirkwood Meadows in the El Dorado Irrigation District of approximately 10,000 gpd used during the ski season.

[1] OCWD WF-21 was originally planned as a water treatment plant for groundwater recharge. Continuous operation is not required. When operating, however, WF-21 must continuously meet discharge requirements. Although WF-21 and well injection system were approved as a seawater intrusion barrier, OCWD estimates that approximately 75-80 percent of the reclaimed water is withdrawn into the potable water systems of Orange County.

Projected Effluent Quality

Table 29b below summarizes the projected wastewater characteristics which may be expected in the treated effluent for the proposed Las Positas development.

TABLE 5.29
WASTEWATER CHARACTERISTICS

Projected Quality for Las Positas Wastewater

	Influent b)	Secondary Effluent	Filtered Effluent	Demineralized Effluent RO Permeate	Demineralized Effluent Blened c) Effluent
BOD_5	275	30	-	-	-
Suspended Solids	275	30	-	-	-
Turbidity (JTU)	-	-	2,0	0	2.0
ph (units)	7.5	7.5	7.5	7.5	7.5
TDS	520-800	520-800	520-800	50	220-320
D.O.	-	2.0	2.0	2.0	2.0
Amonia as N	15	-	-	-	-
Nitrates as N	-	15	15	0.8	6
Chlorides	70-109	70-109	73-109	2-3	26-41
Sodium	73-109	73-109	73-109	4-5	29-40
Potassium	7-15	7-15	7-15	0.4-0.8	1-6
Calcium	83	83	83	1-2	31-37
Magnesium	60-80	60-80	60-80	1-2	22-29
Boron	0.25-0.55	0.25-0.55	0.25-0.55	0.2-0.4	0.2-0.4
Coliform (MPH/100 ml)	-	240	2.2	0	2.2
Temperature °C	15-25	15-25	15-25	15-25	15-25
Phosphate	23	23	23	0.2	8

b) Based on SBA and Zone 7 water treatment plant water quality with increments picked up in domestic sewage.

c) Based on 67.5% of total flow processed through R.O.

Source: Lowry and Associates

As indicated, demineralized flow with a TDS of approximately 50 mg/l would be blended with R.O. bypass flow (at 500 mg/l) to produce a combined TDS average 250 mg/l. The fraction of secondary effluent bypassing the reverse osmosis unit would be well-oxidized, coagulated, filtered and disinfected to meet a coliform limitation of 2.2/mpn. Virus removal would be achieved when filtered effluent is disinfected at a chlorine dosage rate of 10 mg/l and with 2 hours chlorine contact. To conform with Title 22 regulations of the State Department of Health Services, this would be the minimum degree of treatment that must be given to the fraction which bypasses the R.O. unit. Water passing through the RO unit would receive a commensurate degree of treatment, plus passage through a semi-permeable membrane.

Concentrations of inorganic contaminants, such as mineral salts, in water bypassing the RO unit would not be changed. However, at the point of blending, dilution with high quality reverse osmosis product water occurs, at which time concentratoins of inorganic constituents are reduced. These concentrations would be reduced to levels in compliance with waste discharge requirements and water qualtity objectives.

Preliminary Area Requirements

There are four major land area components associated with the proposed project. These are 1) the treatment plant site; 2) the irrigation area; 3) brine evaporation area; and 4) the area required for the seasonal storage ponds. Table 5.30 presents the system requirements.

With respect to the treatment plant site, a 5.0 mgd secondary and advanced treatment plant would require approximately 20 acres of relatively flat area.

The irrigation area must be sufficient to allow for complete consumption of the reclaimed water plus the same amount of buffer zone to insure that the reclaimed water will not go beyond the designated irrigation area limits. Based upon a preliminary evaluation of rainfall and evapotranspiration, Table 5.30 was prepared to determine the amount of area required. This area is 1,470 acres. All of this area is within the Las Positas project area: 865 acres of parks and open space, approximately 315 acres on public and institutional landscaped areas, 167 acres within detached residential areas, 81 acres within multifamily areas, 10 acres within commercial areas, 136 acres within employment areas and 26 acres along major arterial routes.

Brine evaporation ponds are proposed. Net evaporation for the Las Positas area is expected to be approximately 42 inches per year (3.5 feet). Therefore, net acreage requirements are anticipated to be 144 acres, or 200 gross acres; 50 acres are planned for each of the four phases. The Phase I pond is proposed just south of the treatment plant.

The fourth land area requirement is for inclement weather reclaimed water storage, which is typically sized to hold 90 days of plant flow. In this particular application the required volume is between 1,260 and 1,941 acre-feet. The actual area required for the storage facility would depend on its configuration. As shown in Table 5.30, seasonal irrigation demand will vary from as low as 1 percent of annual demand in January to 18 percent of annual demand during July. These percentages are based on the assumption that approximately 18 inches of the annual ET (evapotranspiration) requirements would be made up by rainfall. The estimate contained in Table 5.30 shows a simple seasonal water balance analysis indicating that as much as 1,941 acre feet of seasonal storage capacity may be required for full development of the 5 MGD reclamation system. Final sizing of storage requirements will depend on more detailed analysis of rainfall, evaporation, evapotranspiration, soil permeability, and vegetation.

Figure 2.7 shows several typical cross sections for the seasonal storage ponds. The bank and landscape treatment would vary depending upon pond location, size and physical context. All ponds would be lined so as to prevent seepage into the groundwater system. The location and design of the ponds as well as the landscaping of the irrigated areas would be determined on a site-specific basis.

During the initial facility buildout, the irrigation piping system to the main disposal areas would also be installed. The main pipe system would consist of approximately 26,100 L.F. of 12" diameter (discharge point) to 16" diameter (at treatment yard) pipe.

The wastewater collection piping system would be installed within the road right-of-way. The system itself consists of main collection pipes and manholes spaced every 350', maximum. Pipe sizes vary from 8" to 18" diameter. The summary below includes the length of irrigation pipes for the treated water retail purposes:

	Sewer Collection Pipes (in L.F.)	No. of Manholes	Irrigation Pipes (in L.F.)
Phase I	26,500	76	13,000
Phase II	32,100	91	16,100
Phase III	19,200	56	14,500
Phase IV	27,000	76	22,300

The irrigation piping system would serve to distribute the treated water to various densely populated areas, schools and public grounds, industrial areas and street medians. Unlike the treatment plant facility, the collection and irrigation piping systems would be installed in conjunction with the development of land by phase.

TABLE 5.30

SYSTEM AREA REQUIREMENTS

Irrigation	
Annual Irrigation Needs	56 inches
Annual Average Rainfall	14 inches
Net From Irrigation	42 inches
Assumed Irrigation Spray Losses	10%
Required Irrigation Water	45 inches
Annual Reclaimed Water Flow @ 4.55 mgd	5,100 acre-feet
Irrigation Area Required	1,300 acres
To Allow for Buffer Zone, Use	1,470 acres
Brine Evaporation	
Annual Brine Volume	504 acre-feet
Evaporation Area (Net)	144 acres
Evaporation Area (Allowing for dikes, access roads, etc.)	200 acres
Area Required Each Phase	50 acres
Plant Site	
Treatment Facility (5.0 mgd)	20 acres
Seasonal Storage	
Total Volume	**1,260 to 1,941 acre-feet**

Source: Lowry & Associates, 1982

Proposed Groundwater Management System

A groundwater collection and treatment system is proposed to limit the flow of groundwater into the basin to the south of the Las Positas project area (Airport Subbasin). The collection system would drain an area of approximately 950 acres south of May School Road. The treatment plant would include chemical feeding, filtration equipment, ultraviolet equipment, reverse osmosis facilities, brine evaporation ponds, and administration/control building. The groundwater treatment facility would be a central plant located near to the wastewater treatment plant. Brine would be disposed of by evaporation and hauling. The groundwater treatment plant site, including evaporation ponds, would require approximately 30 to 55 acres. Preliminary estimates of groundwater treatment is 1 MGD of feedwater.

Two options for groundwater management have been identified due to uncertainties, at this time, regarding quality requirements for land application of reclaimed wastewater. The first option assumes that both wastewater and collected groundwater must be demineralized; the second option assumes that all necessary demineralization can be accomplished on collected groundwater:

- Option 1 assumes that demineralization of wastewater to meet a criteria of 250 mg/l TDS would be required for land application. This option corresponds to the proposed wastewater management system described in above. Using the assumption that 10 percent of the wastewater leaches all the salts, percolate reaching the groundwater would be approximately 2,500 mg/l TDS. To prevent groundwater degradation resulting from sub-basin migration, the groundwater and demineralization system would produce 250 mg/l TDS for reuse or stream release.

- Option 2 assumes that with a groundwater collection and treatment system, wastewater demineralization would be unnecessary. Reclaimed wastewater would be treated to acceptable levels for landscape irrigation use. Applied reclaimed water would contain an estimated 500 mg/l TDS. Again using a 10 percent leaching factor, percolate quality would similarly be 5,000 mg/l TDS. Collection and demineralization of groundwater would produce a quality of approximately 250 mg/l TDS for reuse or stream release.

Operations/Management

Project sponsors propose that a County Service Area be established by the County Board of Supervisors to provide wastewater management service and groundwater management to the proposed Las Positas development. The proposed CSA would provide other services, including potable water deliveries. Further discussion of the proposed CSA, of administrative alternatives, and of fiscal and financial issues is contained in Section 5.8.

Impacts and Mitigation

System Feasibility and Reliabilty

Treatment and Reclamation Facilities

If properly designed, constructed and operated, the treatment plant should not result in any public health hazard or nuisance. The requirements of Title 22 of the California Administrative Code for coagulation, filtration and disinfection when coupled with multiple treatment units, alarms and storage requirements should adequately protect the immediate public. The technical feasibility of the proposed discrete system is demonstrated by the examples currently in operation in California and throughout the world. Technical feasibility would also be further assured by providing adequate reliability features within the plant design.

The proposed wastewater reclamation facilities are subject to the same regulatory constraints as other municipal facilities. A permit for operation must be obtained from the Regional Water Quality Control Board. During its review, the Regional Board actively solicits input from other public agencies such as the State Health Department regarding public health aspects. Very specific criteria are established for multiple units, alarms, standby power, emergency storage, etc., and are well defined in the California Administrative Code, Title 22, as summarized on Page III-2 of the technical report dated February, 1982. These requirements would be enforced by the Regional Water Quality Control Board as part of their issuance of discharge requirements and permits.

The proposed facilities would be newly designed and constructed. Generally, new facilities are subjected to any new regulations not in force for existing facilities. Therefore, the proposed wastewater reclamation facility for Las Positas would have equal to or greater reliability features than existing plants in the Livermore-Amador Valley.

Effects on Surface and Ground Waters

The sewage collection and treatment has the potential for contaminating groundwater through pipe breakage or tank leakage. These impacts would be mitigated through a well-managed maintenance program and through selection of particularly strong, leak-proof tank linings (see Section 4.3 for discussion of seismic impacts on utilities).

The potential on-site and off-site effects of the proposed use of reclaimed wastewater for on-site irrigation is discussed in Section 4.4. There would be no significant effect on surface waters within the Las Positas area as no stream discharge of treated wastewaters is proposed. The proposed irrigation with reclaimed water could effect groundwater levels and ground water quality within the project area, of poorer quality groundwaters from the Las Positas basin. The groundwater management program is proposed to regulate groundwater levels. The quality of the reclaimed water used for irrigation would need be in compliance with water quality objectives of Zone 7, water quality objectives and waste discharge requirements of the regional Water Quality Control Board, and Title 22 standards of the State Department of Health Services. Collection and

reverse osmosis treatment of poorer quality groundwaters within the Las Positas basin is proposed to prevent migration of these waters to groundwater basins to the south of the project area.

Toxic and Hazardous Components

Toxic components in the sewage generated by the Las Positas development would be regulated through: 1) a pretreatment program which must be implemented by the local agency; 2) Regional Water Quality Control Board Basin Plan water quality objectives; and waste discharge requirements; 3) State Department of Health Services regulations expressed in Title 22 of the California Administrative code; and 4) Zone 7 policy.

Virus removal is effective when filtered effluent is disinfected at a chlorine dosage rate of 10 mg/l and with two hours chlorine contact. To conform with Title 22 regulations of the State Department of Health Services, this is the minimum degree of treatment that must be given.

Many potential inorganic contaminants, such as mineral salts, would be removed through reverse osmosis demineralization. Concentrations of inorganic contaminants in water bypassing the RO unit would not be changed. Blending with demineralized water would reduce concentrations. These resultant concentrations must be at levels in compliance with waste discharge requirements and water quality objectives.

Maintenance and Operations

Quality of reclaimed water could suffer considerable degradation if the facilities are subjected to unskilled or negligent maintenance and operaton. Unskilled operation could result in ineffective functioning of unit processes, leading to deteriorated water quality and/or breakdowns. Neglect of maintenance could lead to breakdowns affecting major process units and placing the plant out of service until suitable repairs. Planning for the wastewater reclamation system must therefore include provisions for a high level of operation and maintenance, commensurate with water quality demands upon the system. Preliminary operation and maintenance planning would be directed toward and include the following:

- Establishment of a public agency for system ownership, operation and maintenance. The agency would preferably already have had experience in wastewater treatment/disposal. Management and engineering personnel should be experienced in wastewater treatment, disposal and reclamation.

- Employment of operators certified by the State Water Resources Control Board under the provisions of Chapter 9 of the Porter-Cologne Act. Prior experience in wastewater reclamation projects should also be sought as a background qualification of operational personnel.

- o California Water Pollution Control Association maintenance certification would be required for all plant maintenance personnel.

- o A detailed maintenance operation manual would be prepared for the facility and system. Management must ensure that the provisions of the maintenance and operations manual are carried out and that the manual is periodically updated and improved as experience is gained in the operation facility.

- o All reliability features required under Title 22 of the California Administrative Code would be designed and constructed into the system. Redundancy should also be provided in such units as the reverse osmosis equipment, which may not be covered under Title 22 standards in order to enable operators and maintenance personnel to carry out preventative maintenance readily without having to wait for a breakdown before repairs are made.

- o For more complex plant components, a service/maintenance contract should be entered into with the manufacturer of the equipment or similar establishment in order to have available highly skilled personnel for the specific function.

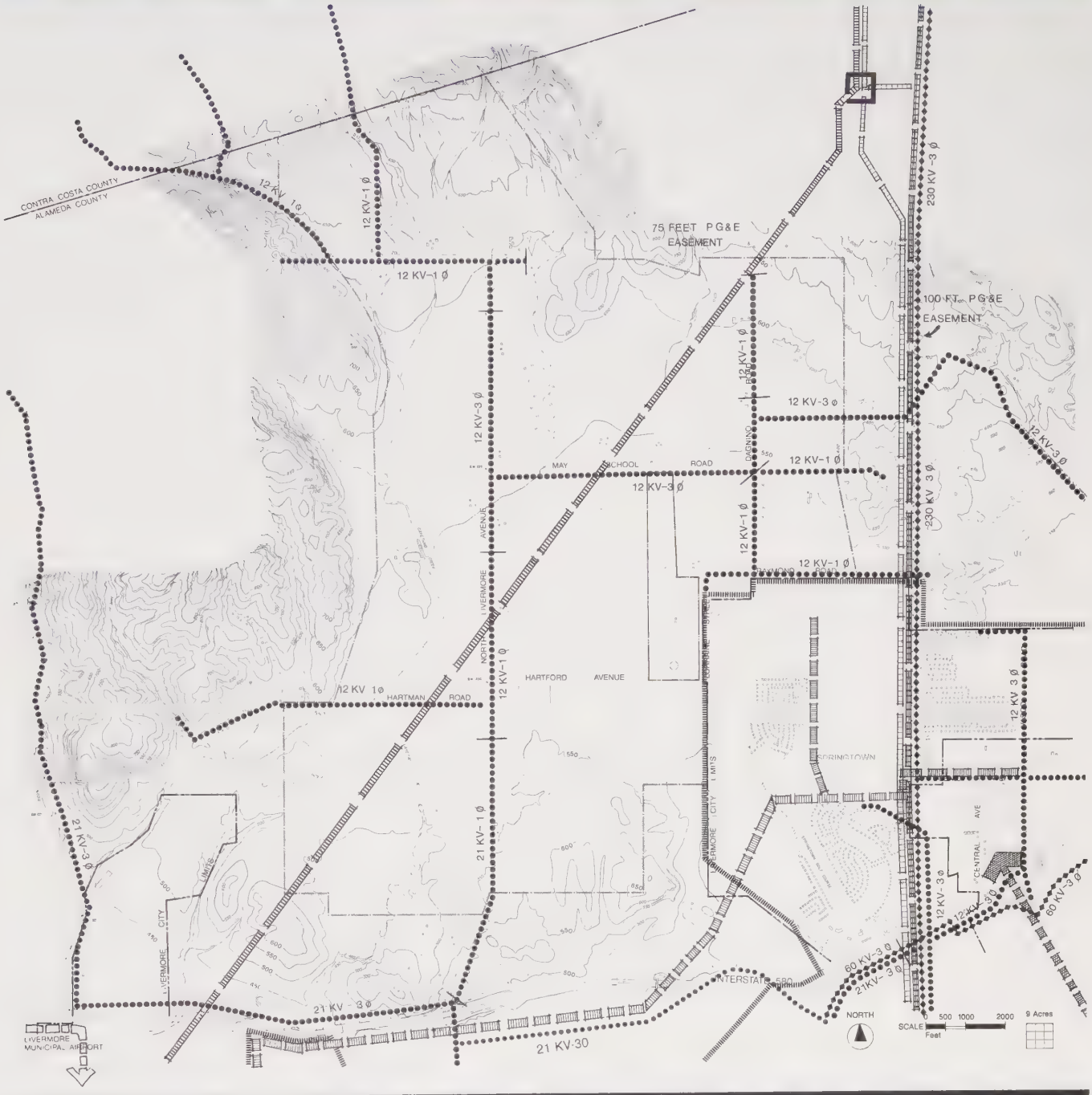
- o At appropriate intervals, an engineering firm should be employed to audit the entire operation, including operation and manintenance.

Irrigation System

Where reclaimed water is used, the irrigation water distribution system must be completely separate from the potable supply. To minimize possibilities of accidental cross-connections, pipe material, pipe color and pipe fittings would differ from those ordinarily employed for potable water, and identification tapes would be buried with both potable and reclaimed water lines. Backflow prevention devices should be installed on each connection to the public potable water supply system serving parks or other public area. Signs cautioning park users against drinking reclaimed water from the irrigation system would have to be posted in appropriate areas. Reclaimed water would contain about 10 to 15 percent mg/l of total phosphorous as P, and a similar concentration of nitrate as N, which would provide nutrient for vegetation and could contribute to a reduction in the cost of fertilizing. Periodic inspection by the public agency providing the reclaimed water would be required under State Department of Health Services/Regional Water Quality Control Board requirements to assure that the system is being properly operated in conformance with waste discharge requirements.

Irrigation of park land with reclaimed water should not significantly interfere with public use patterns, since the preferred time for irrigation is during the night hours when presumably the park is not in use.

Irrigation of private lawns and gardens with reclaimed wastewater is not being proposed.



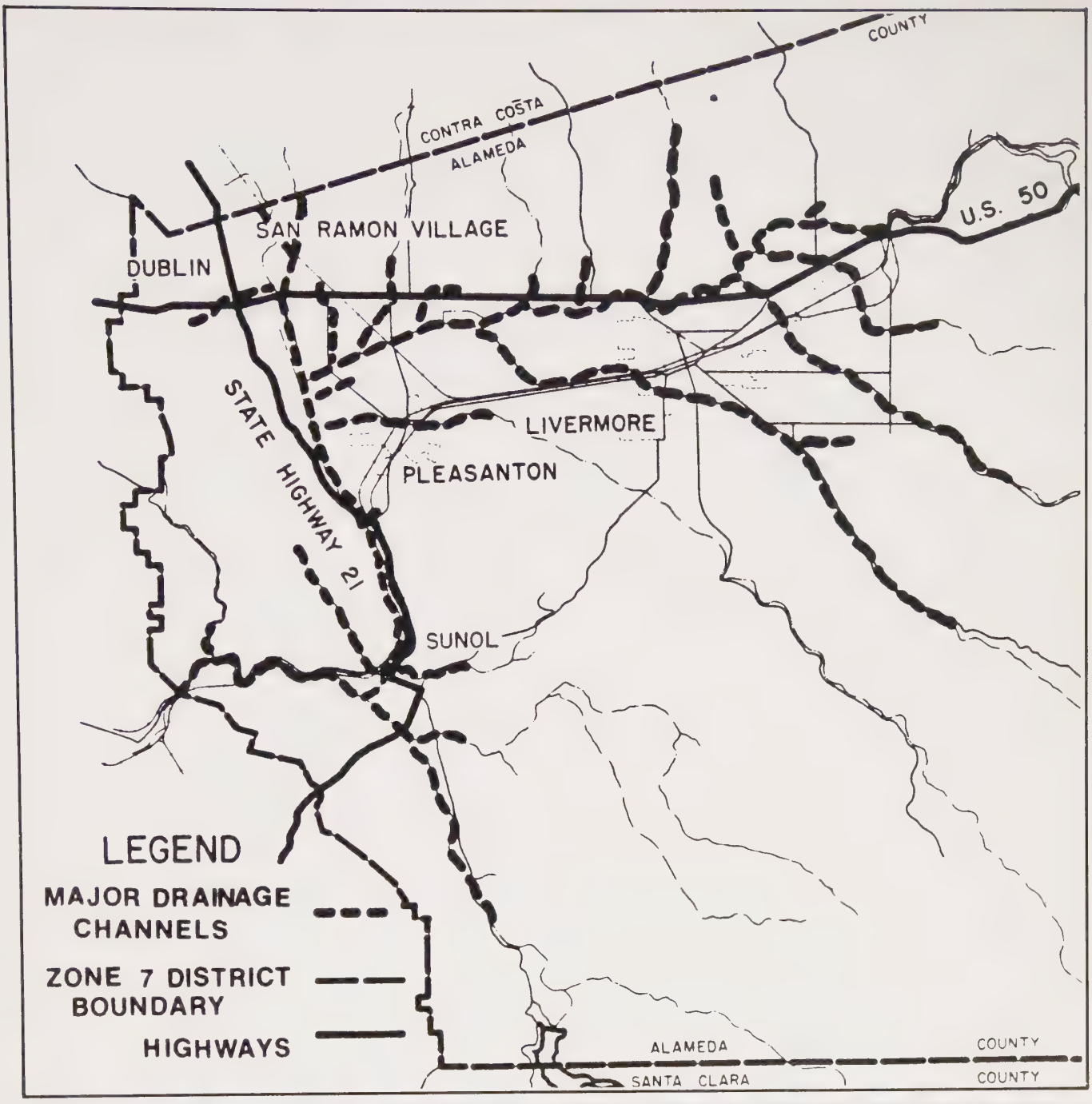
EXISTING UTILITIES

FIGURE 5.8

GAS

- 36" MAIN
- 24" MAIN
- 22" MAIN
- INTERCONNECTION

- 12/21KV — ELECTRICAL LINE
- TELEPHONE BASE RATE AREA BOUNDARY
- SANITARY SEWER LINE
- WATER DISTRIBUTION TRUNK LINE TO SPRINGTOWN
- PROPOSED WATER TRUNK LINE



MAJOR DRAINAGE FACILITIES—ZONE 7 FIGURE 5.9

5.7 TRANSPORTATION

Setting

Transportation facilities and service in the Livermore-Amador Valley area consist of Interstate 580 and Interstate 680; local and county roads, Southern Pacific (SP) and Western Pacific (WP) Railroads for freight; Greyhound, AC Transit, and Sierra bus lines; and the Livermore Municipal Airport. (Figure 5.10, Transportation Linkages.)

Roadways

The Livermore area is accessible to most Bay Area activity centers to the west via Interstate Route 580, which joins Route 17 (Nimitz Freeway) at San Lorenzo (via State Highway 238) and further north at Emeryville near the Bay Bridge Toll Plaza. Interstate 580 is an eight-lane highway, except for a four-lane segment in the Castro Valley area. It directly connects the Livermore area with Stockton, Modesto, Sacramento, and recreation areas further east.

Interstate 580 also connects with Interstate 680 leading to Vallejo and the northern counties. Interstate 680 is a north-south link of the Bay Area freeway system connecting San Jose, Milpitas, Fremont, and communities in the San Ramon Valley with Walnut Creek, Concord, and Vallejo to the north where it connects with Interstate 80.

At the present time, 73,000 trips a day are made on Interstate 580 using the Dublin Canyon area as a cordon point. At peak hours, three to four percent of the traffic consists of trucks which slow westbound traffic because of the steep grade. Traffic congestion on Interstate 580 at peak hours has caused trucks to be restricted to the right lane.

Plans for roadway improvements in the nine Bay Area counties are coordinated by the Metropolitan Transportation Commission (MTC). MTC is responsible for developing the Regional Transportation Improvement Program (RTIP), a five-year improvement program for the Bay Area. One project in the current RTIP, which will affect the transportation network of the Livermore Valley, is the improvements to I-580 being constructed to the west of I-680. When completed, these improvements will provide for an eight lane facility, from the Las Positas site to State Route 238. From I-680 to State Route 238, the two inside lanes in both directions will be reserved for high-occupancy-vehicles (HOV). Caltrans is presently reviewing the status of these HOV lanes to determine if their continued use is justified.

Rail

Southern Pacific (SP) and Western Pacific (WP) rail lines extend through the Livermore-Amador Valley connecting with the statewide national networks. Although SP and WP do not operate passenger service in the area, they do serve Livermore with a daily freight service. Some of the major industries SP and WP serve are steel fabrication plants and sand and gravel batch plants.

It is difficult to predict the future use of the SP right-of-way. Although SP is not now serving passengers in the Livermore-Amador Valley, it appears that the company intends to continue to serve industry. Future planning for SP will depend on employment and industrial growth that could be served by rail freight. In the spring of 1982, SP plans to begin using WP tracks to reduce usage and maintenance costs on their own trackage. This joint trackage agreement will also reduce traffic congestion at railroad crossings in the cities of Livermore and Pleasanton.

Air

Livermore is approximately equidistant from two major regional airports: the Metropolitan Oakland International Airport and the San Jose Municipal Airport. In 1979, the number of passengers using the Oakland Airport was 2,772,000. In the same year, 3,617,000 passengers used the San Jose Municipal Airport.

The Livermore Municipal Airport, a general aviation facility which began operation in April, 1972, had 209,000 operations in 1979. The facility is approximately 3 miles southwest of the Las Positas project area.

Transit

a. BART

BART has contracted with A/C Transit to provide regional transit service in the I-580 corridor between Livermore and the BART stations in Hayward and San Leandro (Bay Fair Station). Approximately 50 round-trip buses operate each weekday in the corridor, with peak hour headways between 15 and 30 minutes. Peak hour travel time between Livermore and the BART stations is approximately 55 minutes. Currently, 3,000 weekday riders are carried between the Valley and the BART stations on the AC Transit buses.

b. Greyhound Bus Lines

Greyhound Bus Lines provide inter-city bus services between San Francisco and Stockton, and between Stockton and San Jose with stops in the valley. No passenger counts are available although only one bus operates through the Livermore area during peak hours.

c. City of Livermore RIDEO System

The City of Livermore operates the only municipal-type transit system in the Livermore-Amador Valley. The RIDEO system consists of six routes operating 15 hours per day on weekdays and 8 hours on Saturdays. The service provides intra-city transit and connections to the AC/BART feeder service. In addition to this fixed route system, Livermore operates a paratransit system for the convenience of senior citizens and the handicapped.

d. Other Bus Companies

Sierra Lines of Concord, California, is a subscription service with collection points in Contra Costa County for trips to the Lawrence Livermore Laboratory. Franciscan Lines, based in San Francisco, provided limited peak-hour service between Livermore and San Francisco. However, this service was terminated in 1981 by PUC action.

e. Bay Area Rapid Transit Rail System (BART)

The Bay Area Rapid Transit District is a three-county, 75-mile rail rapid transit system with 34 stations. Of the 12 stations in Alameda County, the two nearest in terms of time to the populated Livermore-Amador Valley area is the Bay Fair Station in San Leandro and the Hayward Station.

1. Livermore-Pleasanton BART Extension Study

   A series of studies was undertaken in the mid 1970's to identify potential BART extension routes throughout the BART District. One of these studies investigated extension of the BART system to the Livermore-Pleasanton area. On April 24, 1980 a locational and phasing plan was adopted by the BART Board of Directors. This policy statement established the priority rating for the various BART extensions planned in the Bay Area. The first segment of the Livermore extension (reaching the Dublin area) is shown in the 1985 to 1990 time frame, with completion of the extension (to Livermore) scheduled in the 1995 to 2000 time frame.

2. BART Express Bus Service

   The BART Board of Directors recently adopted the "BART Express Bus Plan 1981/82 - 1985/86." The proposed plan provides a blueprint for improving both the efficiency of the Express Bus System and its effectiveness as a means of access to the BART Rail System. The proposed plan calls for streamlining existing services into a rapid and attractive freeway express service that connects the BART Rail System with BART Bus/Park-Ride stations located at possible future rail station sites. It is anticipated that the improved bus service would attract new rail patrons, generate new rail revenue, improve rail access, and function more as an extension of the BART Rail system.

Impacts

Roadways

The development of the proposed Las Positas project would generate demands for mobility on three transportation systems: roadways within the development, Interstate 580 (I-580), and the Livermore area street network. This analysis addressed increases in automobile traffic on these roadway systems. Demands for rail transport (such as an extension of BART service to the Livermore Valley) are also addressed in the discussion of Transportation System Management (TSM).

Nature and Extent of the Analysis[1]

The transportation analysis has been divided into two types of study areas, namely, the primary and secondary study areas. The primary study area includes the proposed project and all on-site roadways, along with I-580 and the five freeway interchanges in the immedate vicinity of the proposed Las Positas project (from Vasco Road to Airway Boulevard). The secondary study area is comprised of I-580, to the west of the primary study area, and the major roadways connecting Las Positas with the City of Livermore and areas to the southwest such as State Route 84, Livermore Avenue, and Vasco Road. Detailed analysis was performed in the primary study area, where the effects of the proposed development would be most significant. A more generalized approach was used in the secondary study area, to develop qualitative data on the impact of Las Positas.

In evaluating the impacts of traffic flow, the total number of daily trips generated does not provide an adequate comparison. Freeways and major roadways are most heavily loaded during the a.m. and p.m. peak hours, which generally occur between 7 and 8 a.m. and 4 and 5 p.m. For these reasons, an analysis of a.m. and p.m. peak-hour traffic volumes and peak-hour roadway capacity has been included.

The principal projection year used in the traffic study is 2005, the proposed project completion year. Many changes in transportation policies and facilities, land use patterns, and transit usage could occur in the next 20 years which would affect the results of this study. Therefore, it should be understood that this is a long-range planning report that would need to be updated periodically.

Land Use Assumptions: Primary & Secondary Study Areas

Land use assumptions for the Livermore-Amador Valley are as shown in the Alameda County General Plan, Figure 5.4, with the addition of the Las Positas development, Figure 2.1. Based on this development pattern, a trip distribution pattern was developed for peak hour traffic generated by Las Positas.

Las Positas Trip Distribution Assumptions

It is assumed that 60 percent of the peak-hour (a.m. or p.m.) traffic from Las Positas with external origins or destinations will be directed to the west by way of I-580. Another 30 percent of this external traffic will be directed to the south and southwest of Las Positas by way of State Route 84, Livermore Avenue and Vasco Road. The remaining 10 percent would use I-580 to reach easterly origins or destinations. This trip distribution is also supported by previous planning studies in the valley.

[1] Prepared by Wilsey & Ham

Transit Projections

Transit usage will be an important component of the total mobility package for Las Positas. However, it is only one of many means available for reducing peak-hour traffic congestion. The collective term for these measures is called Transportation Systems Management (TSM), which includes public transit, car and van pools, preferential parking, staggered work schedules, and other measures. It is assumed that many such actions would need to be taken by Las Positas residents and employers in order to reduce peak-hour congestion on local and regional roadways. TSM assumptions for the Las Positas project are discussed under the section Mitigation Measures.

Transportation System Assumptions

With the exception of the roadway improvements included in the Las Positas development, no significant alterations of the existing transportation system in the Livermore Valley were initially assumed for this study. I-580 will continue to be the major east-west corridor facility in its present eight-lane configuration in the Primary Study Area. Although the City of Livermore plans to realign State Route 84, this facility was assumed to remain in its existing configuration. This study will need to be updated if the change in alignment reaches the funding application and construction stage.

As a result of traffic generated by Las Positas and other cumulative development in the vicinity, various roadway improvements will be needed. These include road widening, signalization, ramp modifications, and other improvements to maximize the carrying capacity of the existing network. Those improvements that are related to Las Positas are discussed under Mitigation Measures.

Regional Traffic Projections

In order to evaluate the effect of Las Positas development on the regional transportation network, it was first necessary to establish year 2005 baseline traffic projections that would be expected to occur without the addition of Las Positas traffic. These baseline projections were developed by analyzing existing traffic counts and projections, and determining an appropriate growth factor that could be applied to present traffic volumes. As such, they are based on Caltrans data and not the current report's employment and population projections for the PMA.

In general, a traffic growth factor of two to three percent per year was applied to existing counts in order to estimate baseline 2005 volumes. The choice between these percentages was based upon the nature of the facility and how much it could be affected by particular localized developments (2.3% per year was used for Interstate 580 in the vicinity of Las Positas, while a 3.0% growth rate was applied to most freeway ramps). This range of growth factors is consistent with other current traffic studies in the area[a]. Where specific

[a]Northbluff Draft EIR (Alameda County Planning, 1981)
A Traffic Study of North Pleasanton (TJKM, 1981)

projections were available from other current studies such as the Northbluff Draft EIR, these projections were used instead of the growth factor projections. The results of this regional baseline analysis are presented in Table 5.31.

The traffic projections presented in Table 5.31 are peak-hour volumes which would be indicative of either the morning or afternoon peak traffic period. The volume presented is the sum of traffic flows on both sides of the roadway, with the exception of the freeway ramps. No directional splits were developed for these peak-hour volumes, as this type of refinement becomes highly speculative for a year 2005 projection. The freeway ramp volumes would vary considerably between the a.m. and p.m. peak traffic periods. However, the ramp volumes presented are the highest that would be expected for either period.

Analytical Approach: Las Positas

Trip Generation Assumptions: Las Positas

Standard trip generation factors from Caltrans and the Institute of Transportation Engineers (ITE) have been used, and are shown in Table 5.32. These factors are presented in terms of trip ends generated per acre-day in order to provide a consistent set of units. The traffic volumes from Las Positas that result from applying the generation factors to the proposed land uses are presented in Table 5.33.

Only the p.m. (afternoon) peak-hour generation factors and traffic volumes are presented in Tables 5.32 and 5.33. A similar set of factors and volumes were developed for each of the land uses during the a.m. (morning) peak period and used in the subsequent analysis. Succeeding sections of this report describe the a.m. and p.m. peak-hour impacts of the development.

Internal/External Trips Assumptions: Las Positas

The volumes presented in Table 5.33 are total traffic volumes generated by Las Positas, including that traffic which would have origins and destinations within the development. Further analysis of the internal and external mix of generated traffic for all types of uses assumed that approximately 60 percent of the peak-hour traffic and 65 percent of the daily volumes would remain entirely within the development. This would result from the availability of employment, commercial, and institutional facilities within the development for Las Positas residents.

TABLE 5.31
REGIONAL TRAFFIC PROJECTION - 2005
WITHOUT LAS POSITAS TRAFFIC

Facility - Segment	Peak-Hour Volume[a,b] Both Directions (vph)	Volume-To-Capacity Ratio[c]
Interstate 580 (Mainline Sections)		
- State Route 84 to Livermore Avenue	7,300	0.45
- Livermore to Portola Avenue	7,200	0.45
- Portola Avenue to Airway Boulevard	10,300	0.65
- Airway Boulevard to El Charro Road	11,000	0.70
Interstate 580 (Ramps)		
- Airway Boulevard Eastbound Off	1,250	0.85
Airway Boulevard Westbound On	1,300	0.85
- Livermore Avenue Eastbound Off	900	0.60
Livermore Avenue Westbound On	350	0.25
- State Route 84 Eastbound Off	350	0.25
State Route 84 Westbound On	350	0.25
- Vasco Road Eastbound Off	1,000	0.65
Vasco Road Westbound On	1,000	0.65
State Route 84		
- I-580 to Portola Avenue	2,500	0.85
- Portola Avenue to Second Street	2,400	0.80
Springtown Boulevard		
- I-580 to Bluebell Drive	1,500	0.50
Vasco Road		
- Northfront Road to I-580	1,100	0.35
- I-580 to WP Tracks	1,700	0.55
North Livermore Avenue		
- North of I-580	300	0.20
- I-580 to Las Positas Boulevard	850	0.30
- Las Positas Boulevard to Portola Avenue	850	0.30
Portola Avenue		
- I-580 to Livermore Avenue	2,650	0.90
New Collier Canyon Road		
- I-580 to New Road "A"	2,000	0.45

[a] Peak-hour volumes derived from existing traffic data and an annual growth rate of between 2.3 and 3.0 percent, depending on the amount of local development. These volumes are indicative of both a.m. and p.m. peak periods.

[b] These projections include traffic generated by the Northbluff development.

[c] See Table 5.35 for the capacity values used in this analysis.

Sources: Caltrans, Traffic Volumes on California State Highways (1978-1981), 1980 Ramp Volumes on the California State Freeway System (1981).
Alameda County Department of Public Works, Index of County Maintained Roads (1981)
City of Livermore Engineering Department, Traffic Counts (1981).
Alameda County Planning Department, Northbluff Draft Environmental Impact Report (1981)

The overall 60 percent internal peak-hour traffic figure results from the summarization of all peak-hour values in the traffic generation analysis. It is assumed that 40 percent of Residential peak hour volumes, and 40 percent of Employment (Office Park, Research & Development) peak hour volumes will remain internal to the project. It is assumed that nearly all of the peak-hour traffic generated by the commercial, public, and institutional uses at Las Positas would be internal traffic.

An assumption of 20% internal peak hour traffic was used in the recent Northbluff EIR for Las Positas. This is considerably less than the assumption in the current analysis. It should be noted here that the Northbluff figure was based on Wilsey & Ham analysis of the 1973 Las Positas Plan. This plan called for 290 acres of industrial development, while the present plan has 543 acres of office and R & D development. The jobs-to-households ratio for the 1973 plan was about 0.4:1, while the current plan has a ratio of 1.1:1. Therefore, there is a closer balance between employees and jobs, which would result in a much higher internal to external traffic ratio.

TABLE 5.32
TRIP GENERATION FACTORS
BY LAND USE

USE	DAILY TRIP ENDS GENERATED (PER ACRE)	P.M. PEAK-HOUR TRIP ENDS GENERATED (PER ACRE) IN	OUT
Residential			
- 2.0 DU/AC	20.0	1.4	0.6
- 4.5 DU/AC	45.0	3.2	1.4
- 7.0 DU/AC	56.0	3.9	1.7
- 15.0 DU/AC	105.0	7.4	3.2
- 20.0 DU/AC	120.0	8.4	3.6
Commercial			
- Town Center	550.0	27.5	27.5
- Village Center	800.0	48.0	48.0
- Neighborhood Center	1,000.0	65.0	65.0
Employment			
- Office Park	195.0	2.9	26.4
- Research & Development	82.5	1.7	14.8
Public/Institutional			
- Elementary & Middle School	60.0	4.5	10.5
- High School	60.0	3.6	8.4
- Government Office	520.0	14.0	62.4
- Churches	60.0	3.0	3.0

Sources: Caltrans, Trip Ends Generation Research Counts (1975-1981)
ITE, Trip Generation (1975)

TABLE 5.33
TRAFFIC GENERATED
BY LAS POSITAS[1]

USE	DAILY VOLUMES (VEHICLES PER DAY)	P.M. PEAK-HOUR VOLUMES IN	OUT
Residential			
- 2.0 DU/AC	10,800	756	324
- 4.5 DU/AC	29,160	2,074	907
- 7.0 DU/AC	40,040	2,789	1,216
- 15.0 DU/AC	31,500	2,220	960
- 20.0 DU/AC	21,600	1,512	648
Commercial			
- Town Center	22,000	1,100	1,100
- Village Center	38,400	2,304	2,304
- Neighborhood Center	15,000	975	975
Employment			
- Office Park	11,700	174	1,584
- Research & Development	39,848	821	7,148
Public/Institutional			
- Elementary & Middle School	8,400	630	1,470
- High School	4,200	252	588
- Government Office	5,200	156	624
- Churches	1,800	90	90
TOTAL VOLUMES	279,650	15,850	19,950

[1]Does not include Transportation System Management measures.

Regional Analysis

a. Primary Study Area

The external component of Las Positas generated traffic was distributed onto the regional roadways in the Primary Study Area using the assumptions previously described. Capacity constraints of the regional facilities (such as freeway ramps and other roadways) were also incorporated into this distribution. The results of this analysis for a.m. and p.m. peak hours are presented in Figures 5.11 and 5.12. Both a.m. and p.m. peak-hour volumes were analyzed because different facilities will be affected during these periods by Las Positas generated traffic.

Peak-hour volumes generated by Las Positas, combined with the other year 2005 traffic increases shown in Table 5.31, will cause capacity conditions to be reached or exceeded on various regional facilities in the Primary Study Area. Table 5.34 provides listing of these facilities and a volume-to-capacity ratio estimate for the a.m. and p.m. peak traffic period. The volume-to-capacity (v/c)

ratio provides a quantitative estimate of the degree to which the capacity of a given roadway is exceeded, if at all. These ratios are related to a quantitative measure of traffic flow conditions, called level of service (LOS), described in Table 5.35. See Table 5.31 for the v/c ratio that would be expected on various regional facilities without the addition of Las Positas traffic.

The v/c ratios in Table 5.34 have been developed for the project without the inclusion of TSM measures and without the inclusion of any major improvements to existing or addition of new roadway facilities. These measures are identified and evaluated as Mitigation Measures. Two major conclusions can be drawn from the v/c ratios presented in Table 5.34:

- o The year 2005 projections for the Primary Study Area show that system-wide congestion would occur during peak periods. Capacity conditions would not be limited to a few restrictive locations, but could be expected on many of the major arterials and freeways. These conditions would cause peak-period traffic volumes to spread out over several hours, instead of being limited to a 60-minute period.

- o Some of the areas of particular concern appear to be the mainline section of I-580, west of Airway Boulevard, Springtown Boulevard north of I-580, and the eastbound off-ramp at Livermore Avenue.

b. Secondary Study Area

The effect of Las Positas development on roadways in the Secondary Study Area would be reduced from those of the primary area. This would result from the natural spreading out of traffic patterns and the traffic reductions which occur as destinations are reached. One area where Las Positas traffic would continue to be influential is along I-580, west of Interstate 680. Here the continued use of the central lanes for High Occupancy Vehicle (HOV) purposes could result in considerable congestion by 2005. HOV lanes are under review by Caltrans.

A preliminary estimate of the distribution of Las Positas generated traffic in the Secondary Study Area is presented in Figure 5.13. This is considered a preliminary estimate because it is based on relative densities of population and employment areas and their distances from Las Positas. A more generally accepted method of developing this type of regional traffic distribution is to perform an origin-destination (O & D) study and apply the results to project traffic. However, such a study was considered to be beyond the scope of this report.

Baseline traffic projections for the portion of the Secondary Study Area in North Pleasanton were developed for the North Pleasanton Traffic Study (TJKM, 1982) and are presented in Figure 5.14. No other projections are available for other parts of the secondary study area. The North Pleasanton projections provide a means of comparison between Las Positas traffic and all other traffic volumes in this area. A "ten percent rule" can be used to convert the daily North Pleasanton volumes to peak-hour (bi-directional) volumes (the peak-hour volume on many urban roadways is approximately ten percent of the daily volume.) It should be understood that the North Pleasanton projections include a two percent annual growth rate for I-580 traffic volumes, which includes some (or all) of the traffic generated by Las Positas. For this reason, care should be taken in comparing the two sets of projections.

TABLE 5.34
VOLUME-TO-CAPACITY (V/C) RATIO AND LEVELS OF SERVICE (LOS) PROJECTIONS FOR REGIONAL FACILITIES WITH AND WITHOUT LAS POSITAS TRAFFIC - 2005

Facility - Segment	Volume-to-Capacity Ratio[1] (V/C) and Level of Service (LOS)			
	With Las Positas[2]		Without Las Positas	
	PM Peak		AM & PM Peak	
	V/C	LOS[5]	V/C	LOS[5]
Interstate 580 (Mainline Sections)				
- State Route 84 to Livermore Avenue	0.70	B	0.45	A
- Livermore Avenue to Portola Avenue	0.90	D	0.45	A
- Portola Avenue to Airway Boulevard	1.10	F	0.65	A/B
- Airway Boulevard to El Charro	1.25	F	0.70	B
Interstate 580 (Ramps)				
- Airway Boulevard Eastbound Off	1.25	F	0.85	C/D
Airway Boulevard Westbound On	1.65	F	0.85	C/D
- Livermore Avenue Eastbound Off	1.65	F	0.60	A
Livermore Avenue Westbound On	1.30	F	0.25	A
- State Route 84 Eastbound Off	0.90	D	0.25	A
State Route Westbound On	1.10	F	0.25	A
- Vasco Road Eastbound Off	1.15	F	0.65	A/B
Vasco Road Westbound On	1.20	F	0.65	A/B
State Route 84				
- I-580 to Portola Avenue[3]	1.35	F	0.85	C/D
- Portola Avenue to Second Street	1.35	F	0.80	C
Springtown Boulevard				
- I-580 to Bluebell Drive[3]	1.80	F	0.50	A
Vasco Road				
- Northfront Road to I-580[3]	1.55	F	0.35	A
- I-580 to WP Tracks[3]	0.75	F	0.55	A
North Livermore Avenue				
- North of I-580[5]	1.25	F	0.20	A
- I-580 to Las Positas Boulevard[3]	1.00	F	0.30	A
- Las Positas Boulevard to Portola Avenue[3]	1.00	F	0.30	A
Portola Avenue				
- I-580 to Livermore Avenue [3]	0.90	D	0.90	D
New Collier Canyon Road				
- I-580 to New Road "A"[4]	0.85	D	0.45	A

Notes:
1 Relationship between v/c and level of service provided in Table 5.35.
The following hourly capacity volumes were used for analysis:
8-lane freeway = 16,000 vph
6-lane arterial = 4,500 vph
4-lane arterial = 3,000 vph
1-lane ramp = 1,500 vph
2 No Transportation System Management measures included in these projections.
3 Assumes 4-lane arterial configuration.
4 Assumes 6-lane arterial configuration.
5 See Table 5.35 for explanation of LOS symbols.

Source: Wilsey & Ham

TABLE 5.35
DESCRIPTION OF LEVEL OF SERVICE

LEVEL OF SERVICE	VOLUME TO CAPACITY RATIO	TYPE OF FLOW	MANEUVERABILITY
A	0 - .65	Free Flow	Turning movements are easily made, and nearly all drivers find freedom of operation.
B	.65 - .75	Stable Flow	Many drivers begin to feel somewhat restricted within groups of vehicles.
C	.75 - .85	Stable Flow	Backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.
D	.85 - .95	Approaching Unstable Flow	Maneuverability is severely limited during short periods due to temporary backups.
E (Capacity)	.95 - 1.0	Unstable Flow	There are, typically, long queues of vehicles waiting upstream of the intersection.
F	Over 1.0	Forced Flow	Jammed conditions. Backups from other locations may restrict or prevent movement of vehicles at the intersection under consideration.

Source: National Academy of Sciences, 1965.

The projections in Figure 5.13 indicate the major access routes for traffic from the proposed Las Positas development would be by I-580 to the east and west, I-680, to the north and south, and to a lesser degree, State Route 84 and Stanley Boulevard to the southwest. Only minor traffic volumes (less than 1,000 vehicles per day) could be expected on such roads as Vasco Road, north of Dalton Avenue, and Tassajara Road or Dougherty Road, north of I-580. A large number of construction trucks could make use of these two-lane roads in Contra Costa County during construction activities at the proposed Las Positas development. This could result in traffic congestion, because of steep grades which would slow the truck and block traffic, and possible damage to the roadway surfaces. Suggested measures to mitigate this potential construction impact are described in Mitigation Measures.

Local Analysis

The "on-site" roadway network of the Las Positas Plan was tested by Wilsey & Ham using a computer traffic model. The results of this modeling indicated that the majority of "on-site" arterial streets would operate at level of service D or better during the peak traffic periods if designed as four-lane divided arterials. Exceptions to this include North Livermore Avenue, which would need to be a six-lane divided arterial, including the central loop which connects to Hartford Avenue on the east side of Las Positas. The arterial street which passes to the south of the office park area in the town core should also be a six-lane divided arterial. The residential collectors which are not a part of the through traffic network would be designed as major two-lane collectors. These include the collector loops shown in the southern and northern areas of Las Positas. Typical cross sections are shown on Figure 2.3.

Project Phasing

Project impacts related to each phase of the Las Positas development were analyzed[1/] to develop a set of mitigation measures which could be applied to each phase. Generally a linear growth pattern was assumed for project and non-project traffic to assess the need for improvements between 1990 and 2005 (the assumed completion years for Phases I and IV).

The preceding traffic analysis should be considered as a long-range planning study, which would need periodic updates. A logical schedule for updating this report would be at the conclusion of successive phases of Las Positas development, or about every five years. In this way, traffic counts and projections could be improved and possible problem areas identified with greater precision.

Mitigation Measures

Roadways

The proposed development would include many features to reduce the impact of peak traffic generated on regional roadways in the project vicinity. The proposal

1/ Wilsey & Ham.

includes local employment opportunities and commercial, recreational and institutional facilities which would reduce the amount of off-site traffic generated. A transit terminal is included in the Town Center plan which could serve as a collection point for BART express buses and local transit, and could eventually be incorporated into an extension of BART rail service to the Livermore Valley. Bicycle paths, pedestrian ways, and equestrian trails along open space corridors and major routes would further encourage non-automobile forms of transportation in Las Positas.

Transportation System Management

As stated earlier, significant system-wide traffic congestion is projected in the Primary Study Area during peak hours by 2005. Transportation System Management (TSM) measures in Las Positas and other major valley developments would improve the operation of the regional transportation network, and would also reduce energy consumption and air pollution. Transportation System Management actions fall into four classes:

1. Reduction of Vehicle Travel Demand.
   - encourage ridesharing
   - transit marketing
   - express bus/park and ride
   - local transit route and schedule improvements
   - paratransit systems
   - bicycle and pedestrian facility improvements
   - pricing (cost incentives for ride share, disincentives for single occupancy)
   - shifting some travel out of peak periods

2. Increased Highway Supply
   - general traffic engineering
   - freeway traffic management
   - truck restrictions and enhancements

3. Actions to Reduce Demand and Degrade Supply
   - preferential treatment for high occupancy vehicles (take a lane for HOV)
   - auto restricted zones
   - parking supply elimination (off street)

4. Actions which Enhance Supply and Reduce Demand
   - preferential treatment (add a HOV land)
   - on street parking restrictions

The first and third categories are most effective in reducing both demand and vehicle miles of travel. In the case of Las Positas, there is a wide range of potential strategies that, if effectively carried through, could serve to substantially reduce peak travel demand. The following TSM measures could be included in the Las Positas development during all project phases:

- Provide for eventual local transit service within the proposed Las Positas development to connect all areas of the development with the transit terminal in the Town Center. This service could take the form of a demand activated ("Dial-a-Bus") system, or could be a scheduled service similar to the RIDEO system in the City of Livermore. Contact will be made with the

City of Livermore to investigate the possibility of a combined system for the two areas.

- Reserve right-of-way within Las Positas for the possible extension of BART service to the Livermore Valley. Alignment and width requirements for these rights-of-way would be coordinated with BART and other local jurisdictions.

- Establish a ride-sharing program for the employment centers in Las Positas. This should include an information center staffed with a ride-sharing coordinator. Card files and pin-maps could be used to facilitate connections between car and van-pooling workers.

- Provide preferential parking for ride-sharing participants. This could include specially marked stalls in preferred parking locations and/or reduced rate parking for participants. Parking revenues collected from non-participants could be used to support other aspects of the ride-sharing or local transit programs. Paid parking and subsequent subsidies for ride-sharing programs would need to be adopted by all Las Positas industries to be equitable.

- Encourage staggered or flexible working hours to be available to all Las Positas employees. Individual companies should be encouraged to consult with other employers to choose the best starting times for their employees. This function could also be performed by the information center, discussed in the measure above.

- Meter traffic during peaks on freeway ramps and high volume roadways in and near the proposed development; provide bypass lanes for transit and carpools.

It is assumed that the use of TSM strategies in Las Positas would not result in a reduction in peak traffic volumes in excess of 25%. This level of reduction is indicated as maximum or optimal. Actual levels of effectiveness would fall between this and levels indicated without any TSM. In a study by the U. S. Department of Transportation in 1978, it was concluded that the combined strategies (including pricing) could realistically achieve a 22% areawide decrease in peak hour commuter travel. Major companies and projects have achieved even greater peak hour volume reductions through TSM. The Boeing Company in Seattle has reduced peak volumes by over 30% through staggering shifts, vanpooling, subscription bus service, and preferential parking at its several plants. At the offices of the Tennessee Valley Authority in Knoxville, Tennessee, 86% of the 3,800 employees ride-share. In the Bay area, 50% employee participation in ride-sharing has been reported for several organizations, including the Lawrence Livermore Laboratory and the Caltrans District 4 offices. A ride-share program sponsored by Hewlitt-Packard in Cupertino has reported that 36% of the work force arrives by means other than a single occupant vehicle.

Single companies have more control over the travel behavior of their employees than cities and counties or project developers have over the travel behavior of a multitude of companies and their employees. Many jurisdictions have found it difficult, but not impossible, to obtain and enforce developer (or tenant or ultimate user) commitments to TSM strategies. This is because TSM strategies need continuing maintenance and enforcement, adding a need for more manpower in the regulatory or enforcement agencies. However, conditions can

be placed on development projects which will have the force of law through successive tenants and/or ownerships. Many cities and counties in California use exactions (or conditions) on development for a wide range of purposes (i.e., Orange County, San Diego County, and Fairfield), and it is possible that Alameda County can develop means to ensure that TSM actions agreed to between the County and the project developers are actually implemented and enforced. These arrangements would initially take the form of performance standards to allow for flexibility in later processing and approvals.

Physical Improvements

Physical improvements to roadway facilities would also be needed to accommodate traffic generated by Las Positas and other area-wide developments. The following outlines the improvements that would be needed in the four phases of Las Positas development. Many of the improvements needed for the early phases of development (Phases One and Two) are clearly definable at this time. Several important assumptions were needed to specify the Phase III and Phase IV mitigation measures, including the following:

- The cost of automobile transportation, as a fraction of personal income, will remain fairly constant through the year 2005.

- Household size and subsequent trip generation characteristics will remain constant over the same period.

- The planned extension of BART trains to the Livermore-Amador Valley will not have a significant effect on the need for regional roadway improvements.

All of the above assumptions could prove to be erroneous; even one could have a dramatic effect on the projections. Therefore, traffic update reports should be periodically prepared to revise and update the current proposed mitigation measures. By project phase, proposed improvements include the following:

a. Phase One (Assumed Completed By 1990)

   - Widen North Livermore Avenue, north of I-580, to a four-lane divided arterial street, with extra turning lanes at major intersections.

   - Widen the eastbound off-ramp at the North Livermore Avenue/I-580 interchange to two lanes in order to provide additional storage for vehicles exiting the freeway and turning northward to Las Positas. A one-lane connection to the freeway would be sufficient for the ramp in Phase I. However, consideration should be given to the ultimate alignment of this ramp for later phases, when a two lane freeway connection would be needed.

   - Prepare a traffic report update which addresses the impacts of Phase II development. This update should be prepared during the approval process for Phase II construction, and should include monitoring of Phase I generated traffic. The purpose of this traffic update would be to identify any needed improvements in the downtown area of the City of Livermore as a result of Phase II construction and to establish the amount of Las

Positas participation in the Airway Boulevard/I-580 interchange improvements.[a] Both of these tasks would be best handled after traffic data is available from Phase I and the development plans for other projects north of I-580 are farther along in the planning process.

- o During the permit process for each component of the proposed Phase I development, consideration should be given to truck routes for construction vehicles. These truck routes should be established by the Alameda and Contra Costa County Public Works Departments, to minimize damage to minor streets and create a mechanism for repair, if necessary. This measure also applies to the other phases of the development.

b. Phase Two (Assumed Completed By 1995)

- o Widen North Livermore Avenue, between the project site and Las Positas Road (south of I-580), to a six-lane arterial. Also re-stripe the underpass at I-580 to four through-lanes and a left-turn median. Signals would be needed at both intersections of the interchange (eastbound ramp and westbound ramp intersections with North Livermore Avenue).

- o Construct an auxiliary freeway lane between the Portola Avenue and North Livermore Avenue interchanges of I-580, on the eastbound side. Provide a two-lane off-ramp at the eastbound approach to North Livermore Avenue. Widen the eastbound approach to the ramp intersection with North Livermore Avenue to accommodate two left-turn lanes and a right-turn lane.

- o Construct a two-lane collector roadway between Las Positas and the Northbluff development. This would also necessitate the widening of the Airway Boulevard/I-580 overcrossing to five lanes (three northbound and two southbound).

- o Implement recommended improvements of the Phase I traffic update report. It is anticipated that some downtown Livermore signalization and channelizaton improvements would be needed as a result of Phase II construction. (For the purpose of estimating costs of mitigation to the project, it was assumed that two new traffic signals would be needed in the City of Livermore.)

- o Prepare a Phase II traffic update report which addresses the improvements needed for Phase III development. This update should again include some monitoring of Las Positas traffic and address the need for additional improvements in downtown Livermore. It may also be necessary to assess

[a] Interchange improvements at Airway Boulevard are included in the Northbluff development plan. Additional widening of the overcrossing will be needed when a connector road is established between the Northbluff area and Las Positas (planned for Phase II). Other developments north of I-580 would also be expected to make use of this facility and contribute to the improvements.

the impacts of Phase III development on other neighboring cities such as Pleasanton and Dublin (this could be decided during the process of defining the scope of the Phase II update report). Another important objective for the Phase II traffic update would be to determine the improvements needed for additional freeway access for Las Positas.

c. Phase Three (Assumed Completed By 2000)

- o Widen New Collier Canyon Road, between the freeway interchange and a point approximately 1500 feet north of "New Road A", to a six-lane arterial.
- o Construct a two-lane collector roadway between Hartford Avenue and Las Positas Road. Provide freeway ramps at the existing overcrossing for traffic travelling to and from the west on I-580.
- o Construct auxiliary freeway lanes on both sides of I-580, between Las Positas Road and El Charro Road. These lanes would provide a new lane connection between the on- and off-ramps of successive interchanges and some widening of the eastbound off-ramps (as indicated in Phase II for the North Livermore Avenue interchange).
- o Implement the recommended improvements in the Phase II traffic update report. For the purposes of cost estimates, it is assumed that approximately one mile of roadway in the City of Livermore would need to be widened by two lanes, and four new traffic signals would be needed.
- o Prepare a Phase III update report which addresses the improvements needed for Phase IV development.

d. Phase Four (Assumed Completed By 2005)

- o Construct a two-lane collector road between New Collier Canyon Road and Portola Avenue (frontage road segment, south of I-580). A new freeway overcrossing would be needed for this connection, to the west of the existing flyover ramp.
- o Construct a two-lane collector road between Las Positas and Vasco Road (probably connecting the alignments of Hartford Avenue and Dalton Avenue). This collector road should also provide a connection to Springtown Boulevard.
- o Widen Vasco Road, between the freeway interchange and Scenic Avenue, to a four-lane arterial.
- o Widen State Route 84, between Portola Avenue and I-580, from two to four lanes.
- o Widen the freeway overcrossings at State Route 84 and Vasco Road interchanges from two to four through lanes.
- o Implement the recommended improvements in the Phase III update report. (For the purposes of cost estimates, it is assumed that approximately two miles of road widening (by two lanes) and eight new traffic signals will be needed in Livermore and other nearby cities.)

Table 5.36 presents estimates of PM peak hour volume-to-capacity ratios for facilities with these proposed roadway improvements, and with and without Transportation System Management (maximum 25% reduction in volumes). For comparison, conditions without the roadway improvements and without the Las Positas project are also presented.

While the proposed roadway improvements would result in measurable improvements in flow conditions on the facilities evaluated, unstable and forced flow conditions would remain on many, unless effective TSM strategies were also implemented. Flows on I-580 between Airway Boulevard and El Charro Road would remain forced (LOS F) even with effective TSM. With TSM, temporary backups (LOS D) would occur on the Airway Boulevard ramps to I-580, and on a number of local facilities - State Route 84 between Portola Avenue and Second Street; Springtown Boulevard; Vasco Road, north of I-580; and North Livermore Avenue, between the project and I-580 freeway. Without TSM, these facilities should be expected to experience unstable to forced flows (LOS E, F).

Table 5.37 presents cost estimates for off-site roadway improvements. These figures are used in the Fiscal/Financial Analysis, Section 5.8.

TABLE 5.36
PM PEAK HOUR VOLUME-TO-CAPACITY (V/C) RATIO PROJECTIONS
FOR REGIONAL FACILITIES WITH AND WITHOUT PROPOSED ROADWAY IMPROVEMENTS [1,2] - 2005

FACILITY	With Proposed Roadway Improvements				W/O Proposed Roadway Improvements				Without Las Positas
	TSM Incl.[3] PM		W/O TSM PM		TSM Inc.[3] PM		W/O TSM PM		AM-PM
- Segment	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C LOS
Interstate 580 (Mainline Section)									
- State Route 84 to Livermore Ave.[4]	0.60	A	0.65	A/B	0.65	A/B	0.70	B	0.45 A
- Livermore Ave. to Portola Ave.[4]	0.70	B	0.80	C	0.80	C	0.90	D	0.45 A
- Portola Ave. to Airway Blvd.[4]	0.85	C/D	1.00	F	0.95	D/E	1.10	F	0.65 A/B
- Airway Blvd. to El Charro Road[4]	1.00	F	1.15	F	1.10	F	1.25	F	0.70 B
Interstate 580 (Ramps)									
- Airway Blvd. Eastbound Off	0.75	B/C	0.75	B/C	1.15	F	1.25	F	0.85 C/D
Airway Blvd. Westbound On	0.90	D	1.05	F	1.45	F	1.65	F	0.85 C/D
- Livermore Ave. Eastbound Off	0.80	C	0.95	D/E	1.40	F	1.65	F	0.65 A/B
Livermore Ave. Westbound On	0.65	A/B	0.75	B/C	1.05	F	1.30	F	0.25 A
- State Route 84 Eastbound Off	0.40	A	0.50	A	0.75	B/C	0.90	A	0.25 A
State Route 84 Westbound On	0.55	A	0.55	A	0.90	D	1.10	F	0.25 A
- Vasco Road Eastbound Off	0.75	B/C	0.75	B/C	1.00	E/F	1.15	F	0.65 A/B
Vasco Road Westbound On	0.75	B/C	0.85	C/D	1.05	F	1.20	F	0.65 A/B
- New Las Positas Rd. Eastbound Off	0.55	A	-		-		-		-
New Las Positas Rd. Westbound On	0.55	A	-		-		-		-
State Route 84									
- I-580 to Portola Ave.[6]	0.60	A	0.65	A/B	1.25	F	1.35	F	0.85 C/D
- Portola Ave. to Second St.[5]	0.90	D	0.95	D/E	1.20	F	1.35	F	0.80 C
Springtown Blvd.									
- I-580 to Bluebell Drive	0.90	D	1.05	F	1.45	F	1.80	F	0.50 A
Vasco Road									
- Northfront Rd. to I-580[5]	0.90	D	1.05	F	1.25	F	1.55	F	0.35 A
- I-580 to WP Tracks[5]	0.65	A/B	0.70	B	0.70	B	0.75	C/D	0.55 A
North Livermore Avenue									
- North of I-580[6]	0.90	D	1.15	F	1.00	E/F	1.25	F	0.20 A
- I-580 to Las Positas Blvd.	0.80	C	0.95	D/E	0.85	C/D	1.00	F	0.30 A
- Las Positas Blvd. to Portola Ave.	0.80	C	0.95	D/E	0.85	C/D	1.00	F	0.30 A
Portola Avenue									
- I-580 to Livermore Ave.	undefined[7]		undefined[7]		0.90	D	0.90	D	0.90 D
New Collier Canyon Road									
- I-580 to New Road "A"[6]	0.80	C	0.85	C/D	0.75	B/C	0.85	C/D	0.45 A
New Las Positas Rd. Connector									
- I-580 to Hartford Ave.	0.65	A/B	0.95	D/E	-		-		-
New Portola Ave. Connector									
- Portola Ave. to New Collier Canyon Rd.	0.80	C	1.00	E/F	-		-		-

Notes: 1 Relationship between v/c and level of service provided in Table 5.35.
The following hourly capacity volumes were used for analysis:

8-lane freeway	= 16,000 vph	1-lane ramp	= 1,500 vph
6-lane arterial	= 4,500 vph	2-lane ramp	= 2,400 vph
4-lane arterial	= 3,000 vph	Auxiliary lane	= 1,500 vph

2 Assumes that all identified physical roadway improvements, described under Mitigation Measures, will be in place.

3 A 25 percent TSM program was assumed for Las Positas only (no other participation).

4 Assumes 10-lane freeway configuration (8 lanes plus auxiliary lanes).

5 Assumes 4-lane arterial configuration.

6 Assumes 6-lane arterial configuration.

7 This v/c ratio would depend on City of Livermore improvements, such as the realignment of State Route 84.

Source: Wilsey & Ham

TABLE 5.37

COST ESTIMATES FOR OFF-SITE
ROADWAY IMPROVEMENTS[3]

PHASE I ESTIMATE

Location	Improvement	Costs to Las Positas[1,2]
N. Livermore Avenue (I-580 to project site)	Widen from two to four lanes. No cost sharing anticipated.	$ 500,000
N. Livermore Avenue/I-580 (interchange eastbound off-ramp)	Widen from one to two lanes (only one lane connection to freeway). No cost sharing.	50,000
Phase I Traffic Update		25,000
Phase I Total		$ 600,000

PHASE II ESTIMATE

Location	Improvement	Costs to Las Positas[1,2]
N. Livermore Avenue (Project site to Las Positas Road)	Widen from four to six lanes. Re-stripe underpass. Some cost sharing anticipated (Las Positas assessed 75% of total).	$ 350,000
N. Livermore Avenue (Two intersections at I-580 interchange)	Signalize both intersections. 75% participation assumed.	150,000
I-580, Portola Avenue to N. Livermore Avenue (south side only)	Add auxiliary lane. No cost sharing.	100,000
New Collier Canyon Road	Construct two-lane collector roadway between Las Positas and Northbluff. No cost sharing.	650,000
Airway Boulevard/I-580 interchange	Widen overcrossing to five lanes. 50% participation assumed.	850,000

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[1] 1982 dollars
[2] No right-of-way aquisition assumed
[3] Wilsey & Ham

TABLE 5.37 (cont).

PHASE II ESTIMATE (CONTINUED)

Location	Improvement	Costs to Las Positas[1,2]
City of Livermore, generalized improvements	Install two new traffic signals where needed. No cost sharing assumed.	$ 250,000
Phase II Traffic Update		50,000
Phase II Total		$2,400,000

PHASE III ESTIMATE

Location	Improvement	Costs to Las Positas[1,2]
New Collier Canyon Rd. 2,600 ft. north of I-580 to I-580	Widen from four to six lanes. 50% participation assumed.	$ 100,000
Las Positas Road to Hartford Avenue	Construct two-lane connector road and two ramps for freeway access to and from west. 75% participation assumed.	1,000,000
I-580, Las Positas Road to Portola Avenue	Add auxiliary lanes on both sides of freeway (in addition to one added in Phase II). No cost sharing assumed.	650,000
I-580, Portola Avenue to El Charro Road	Add auxiliary lanes on both sides of freeway. 50% participation assumed.	1,000,000
City of Livermore, generalized improvements	Widen approximately one mile of city street by two lanes, and add four new traffic signals where needed. No cost sharing assumed.	1,250,000
Phase III Traffic Update		50,000
Phase III Total		$4,050,000

[1] 1982 dollars
[2] No right-of-way acquisition assumed.

TABLE 5.37 (cont.)

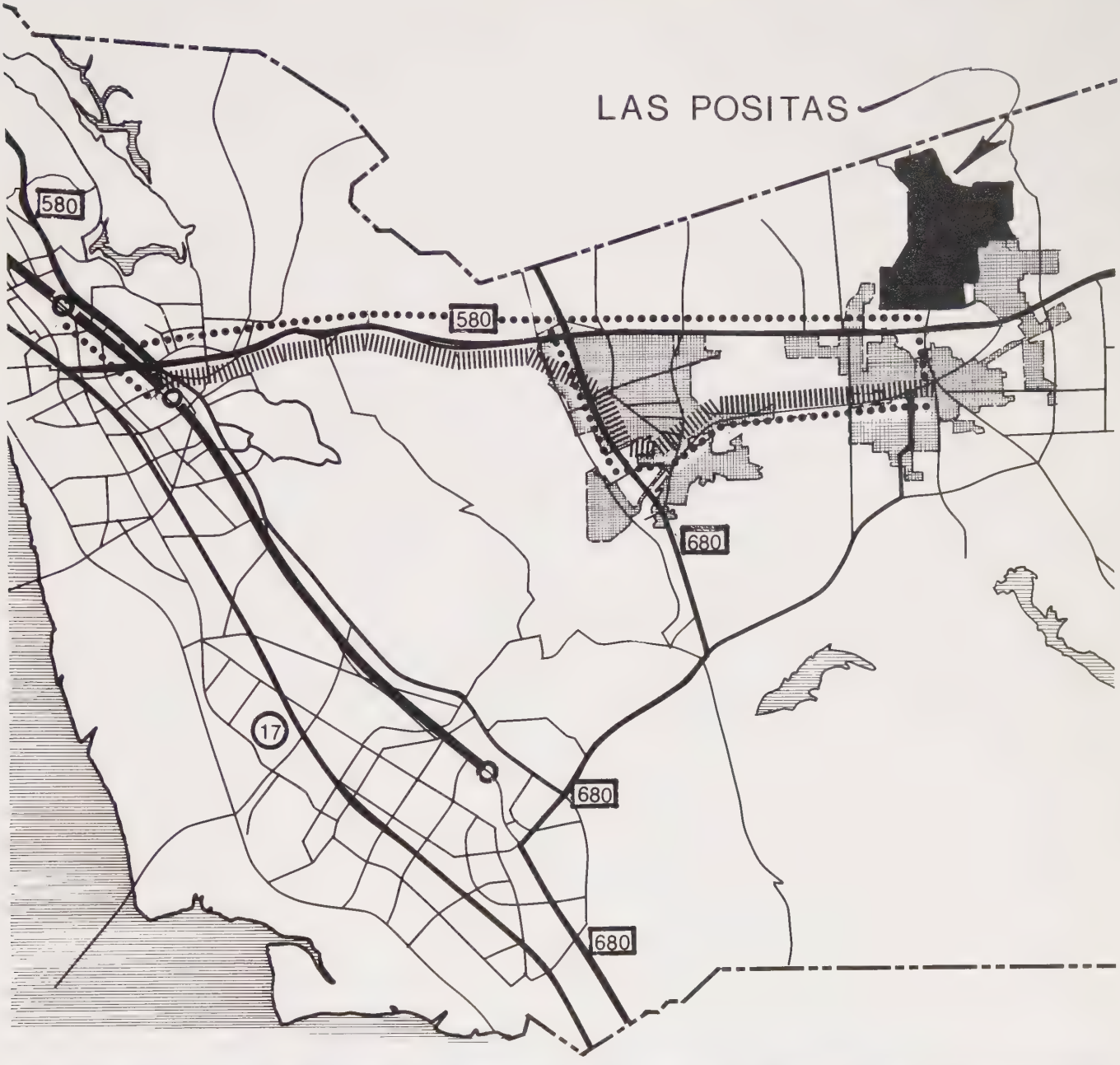
PHASE IV ESTIMATE

Location	Improvement	Costs to Las Positas[1,2]
Portola Avenue to New Collier Canyon Road[3]	Construct two-lane connector road and new two-lane overcrossing. 75% participation assumed.	$2,550,000
Hartford/Dalton Avenue	Construct two-lane connector road to Vasco Road. No cost sharing assumed.	650,000
Vasco Road, I-580 to Scenic Avenue	Reconstruct to four-lane arterial. No cost sharing assumed.	650,000
State Route 84, Portola Avenue to I-580	Widen from two to four lanes. 25% participation assumed.	250,000
State Route 84 and Vasco Road interchanges on I-580	Widen overcrossings from two to four through-lanes. 25% participation assumed.	1,100,000
City of Livermore, generalized improvements	Same as Phase III generalized improvements.	1,250,000
Other city improvements, Pleasanton or elsewhere	Same as above.	1,250,000
Phase IV Total		$7,700,000

1 1982 dollars
2 No right-of-way acquisition assumed.
3 This new connector road could be aligned to tie-in with the proposed re-alignment of State Route 84 (west of Portola Avenue). The traffic update report for Phase III would re-evaluate this project in light of other City of Livermore transportation plans.

Airport Services - Impacts

The Las Positat project would generate demand for approximately 175 general aviation aircraft spaces at the Livermore Municipal Airport; this would be in addition to the expansion currently planned. The project would also accelerate the need for other airport improvements, such as the proposed second parallel runway.



TRANSPORTATION LINKAGES

FIGURE 5.10

MAJOR FREEWAYS

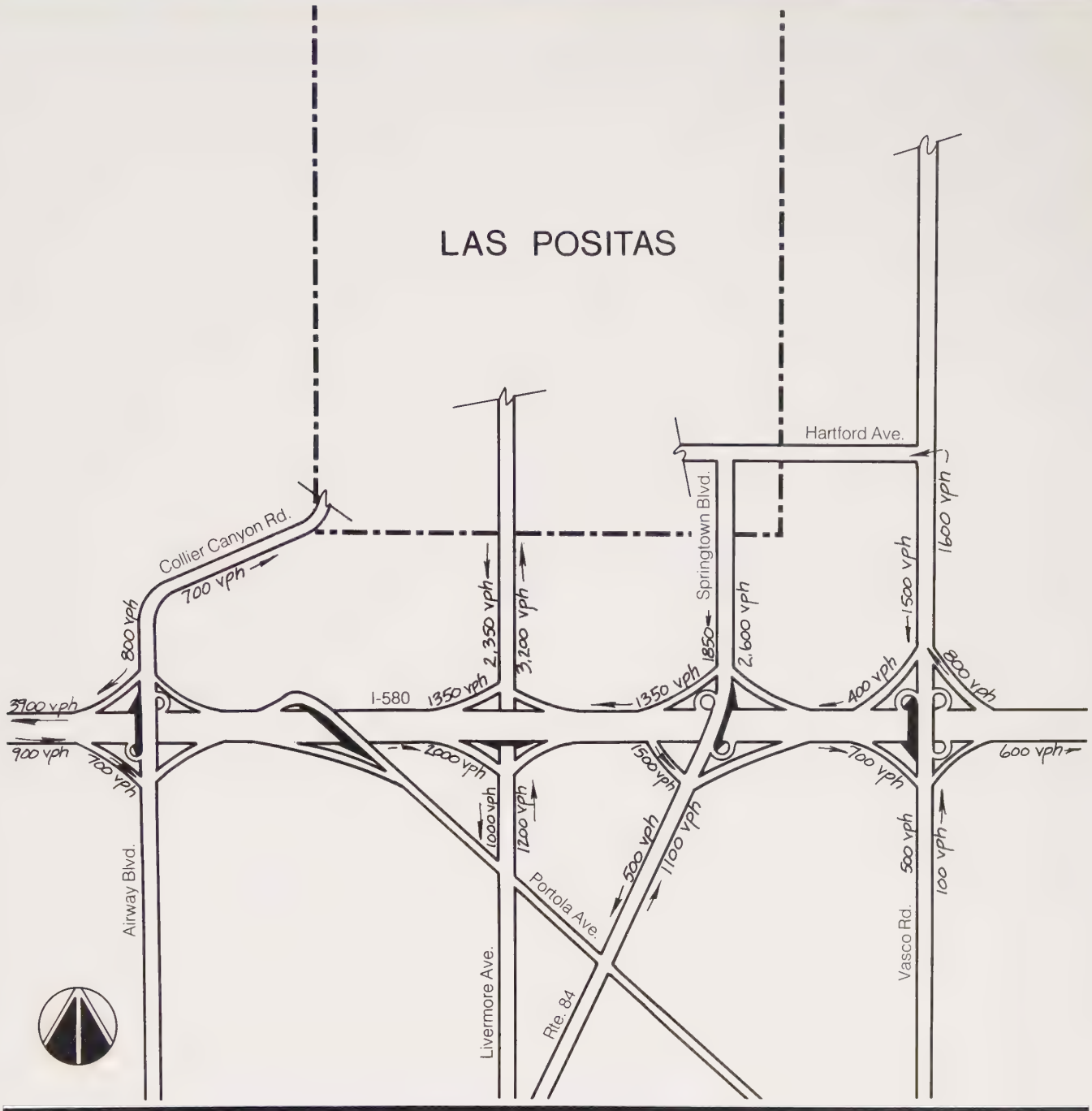
EXISTING BART ROUTE AND STATIONS

GENERAL ROUTE OF EXPRESS BUS SERVICE BETWEEN HAYWARD AND BAYFAIR STATIONS AND THE LIVERMORE-AMADOR VALLEY

GENERALIZED CORRIDOR FOR POSSIBLE EXTENSION OF BART INTO THE LIVERMORE-AMADOR VALLEY

SOURCE: LIVINGSTON-BLAYNEY, ASSOCIATES
LIVERMORE PLEASANTON BART EXTENSION STUDY-PRELIMINARY ALTERNATIVES, MARCH 1973

3 MILES

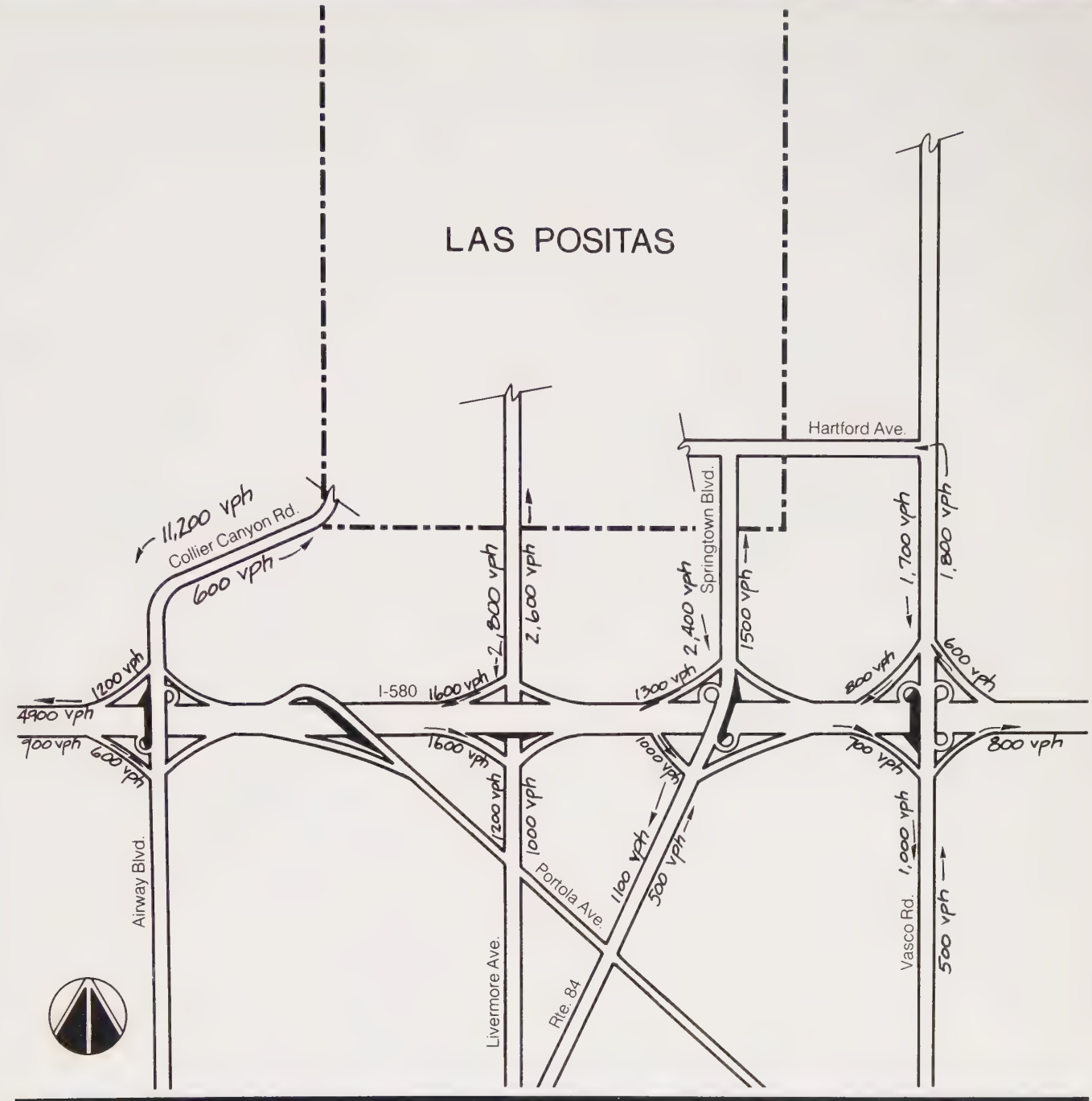


AM PEAK HOUR TRAFFIC GENERATED BY LAS POSITAS ON REGIONAL ROADWAYS-2005

FIGURE 5.11

no TSM* included

*Transportation System Management

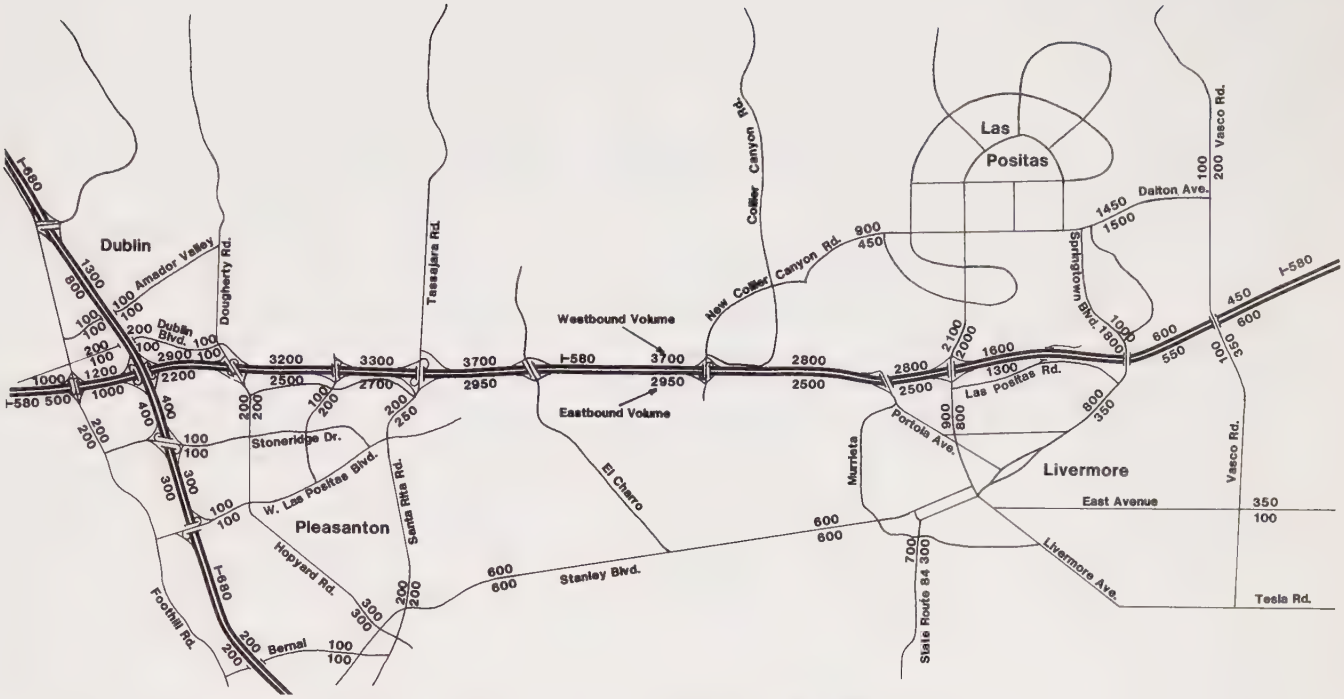


PM PEAK HOUR TRAFFIC GENERATED BY LAS POSITAS ON REGIONAL ROADWAYS-2005

FIGURE 5.12

no TSM* included

*Transportation System Management

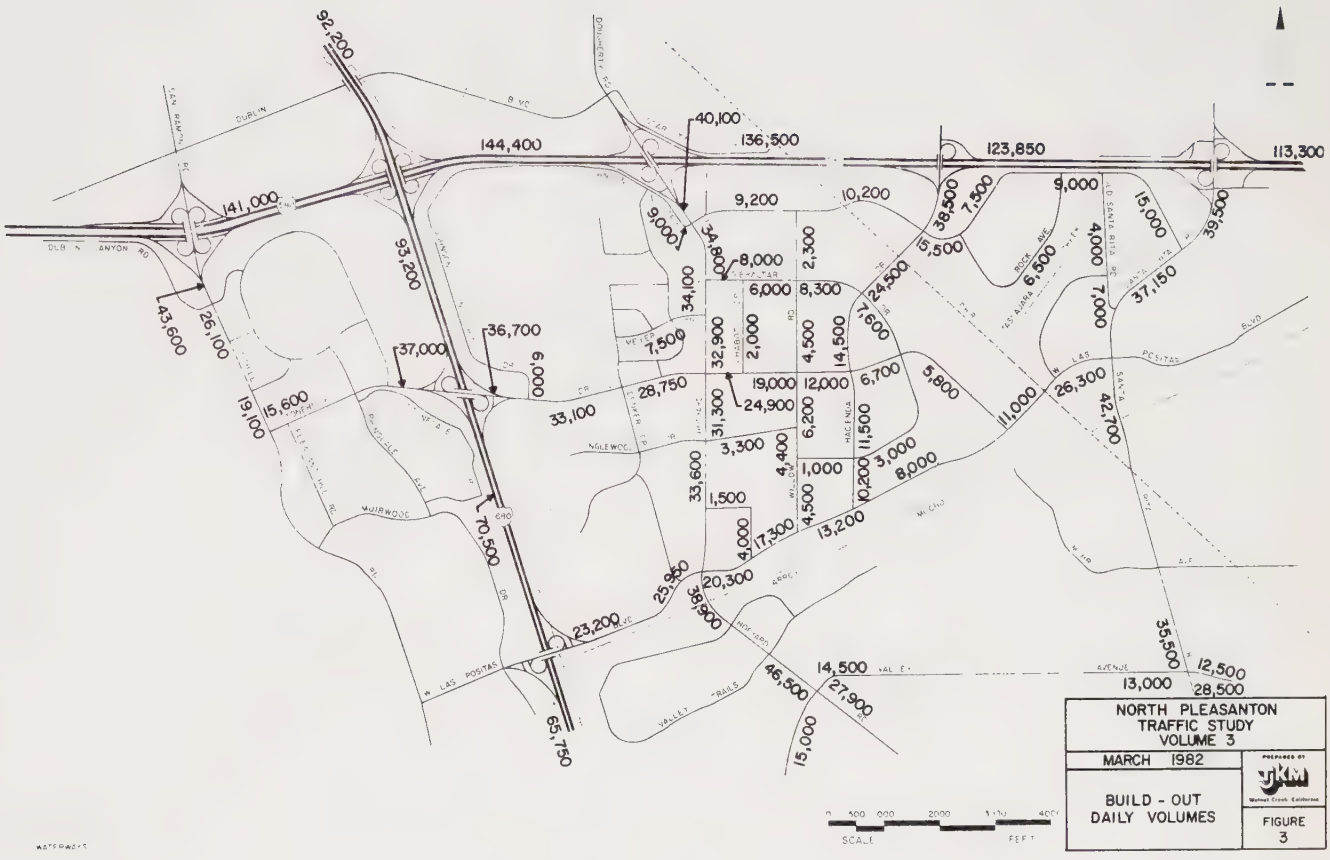


Notes:

1. The above traffic distribution is an approximation of the origin - destination patterns for Las Positas traffic. Subsequent traffic update reports should review and revise these estimates.
2. A.M. peak hour volumes generated by Las Positas can be approximated by reversing the directions of P.M. volumes.
3. Volumes are P.M. peak hour traffic generated by Las Positas at full development. A 25% reduction of volumes due to implementation of TSM is assumed.

PM PEAK HOUR TRAFFIC AND SECONDARY STUDY AREA, YEAR 2005

FIGURE 5.13



NORTH PLEASANTON TRAFFIC STUDY

FIGURE 5.14

5.8 FISCAL IMPACT ANALYSIS
Prepared by Angus McDonald & Associates

INTRODUCTION

This section provides a fiscal analysis of the proposed development. Unless otherwise noted cost and revenue estimates and projections refer to the proposed Project Description and Proposed Financing Plan and to the Public Services and Public Utilities section of the present chapter. The current analysis uses detailed case studies to estimate incremental costs and revenues for those public services to the proposed Las Positas development that may differ significantly from county-wide averages. County-wide average cost or revenue multipliers are used in those cases where Las Positas could be assumed to be similar to county-wide averages or comparable to other areas in Alameda County. The framework of the analysis is a year-to-year estimate of cash flows for each public service agency which would provide services to the proposed Las Positas development. This approach assures that any interim fiscal effects that might differ from the completed project would be apparent. When project buildout occurs over a long period of time, as it would with the Las Positas proposal, application of this approach is especially important.

The content of the fiscal impact analysis is defined broadly to include the financial effects of the proposed project on agency fund balances, vulnerability to potential changes in revenues or costs, and identification of those who would bear the burden of the financing plan. There is also a qualitative analysis of possible fiscal issues after project buildout. The estimated buildout period would end in 2005; the actual completion date would, of course, be subject to considerable uncertainty. The post-buildout analysis is intended only to test the extent to which actions taken now can deal with potential future problems. It does not provide a quantitative prediction of fiscal effects that may occur over 20 years from now.

Fiscal impacts may be positive or negative. The greatest quantitative emphasis is placed upon the potentially negative financial effects on public agencies. Insofar as negative impacts are revealed, mitigation measures are proposed. For example, a major potential cause of fiscal impacts is the project sponsor's financing plan. A revised financing plan is offered as a mitigation measure. All mitigation measures are intended to form realistic and implementable alternatives to various aspects of the current project proposal that are shown to be the potential cause of fiscal impacts.

Rather than escalating the cost and revenue projections based upon estimated future inflation rates, all cost and revenue estimates are presented in dollars of constant February 1982 purchasing power. However, an allowance has been made (and noted) in all cases where this "constant dollar" approach would distort the conclusions. (For example, because of the terms of Proposition 13, property tax revenue dollars would, for any given property, decline in terms of real purchasing power.)

Cost and revenue estimates are based directly upon the proposed project description and assumptions concerning annual absorption of residential, commercial and industrial land. Both the assumptions concerning land absorption and the corresponding construction of required public improvements would be subject to future economic conditions and do not necessarily reflect what could actually happen. The present analysis evaluates a probable series of events. Major variation in these assumptions that could affect the fiscal impacts of the Project are also considered.

The fiscal analysis is organized by two major sections: capital costs and financing, and ongoing costs and revenues. In each of these sections, impacts relating to each public agency are identified. Impact categories include: fund balance impacts; vulnerability of the agency to potential changes in the project description costs or revenues; burden of the revenue sources on various groups; and finally, the post-buildout situation. Mitigation measures are suggested for each potentially negative impact.

CAPITAL COSTS AND FINANCING: PROJECT PROPOSAL

The following summary of the proponent's proposal for providing and financing major capital improvements is intended to clarify subsequent components of the fiscal analysis:

- A County Service Area (CSA) would be created to provide infrastructure and municipal services and to collect fees to finance infrastructure provided by other public agencies.

- All subdividers would be charged a fee to purchase, or would dedicate land for specified public purposes.

- All builders would be charged a fee for construction of infrastructure equal to each unit's incremental share of these costs.

- The project proponent (Sponsor) would advance the CSA or Alameda County approximately $14,000,000 to finance infrastructure and land acquisition required prior to the receipt of fees. The advance would be repaid from available surpluses in the CSA's Capital Improvement Fund and the Public Land Acquisition Fund.

All capital cost estimates for the proposed Las Positas County Service Area (CSA) were initially provided by Wilsey & Ham, acting in their capacity as professional engineers and consultants to the Las Positas Land Company. Some capital cost estimates were provided by public agencies providing services. The EIR team has depended entirely upon these estimates.

1. Capital Costs By Public Agency

The proposed Las Positas CSA would finance virtually all of the major capital improvements required within Las Positas. The capital improvements financed directly by the CSA would include sewage

treatment and disposal, ground water management, water service, and public buildings. Capital improvements constructed by other agencies such as parks, on-site flood control channels, and roads would be financed through funds generated by the CSA. Table 5.38 summarizes the proposed capital costs and financing for the capital improvements constructed by the CSA. The specific capital improvements were described in Section 5.6 of this EIR. These capital improvements do not include site improvements such as local streets, sidewalks, sewer and water laterals, drainage systems, or gas, electric or telephone utilities.

The capital improvements required for the services to be provided by Alameda County are shown in Table 5.39. No capital expenditures would be required for general government services such as administrative functions, finance, counsel, personnel, property management, elections and promotions, sheriff administration operations, courts, the coroner's office, animal control, health, public assistance, or social services.

Streets. The costs of constructing major streets include both on-site and off-site improvements. An allocation from the sponsor's advance would cover $1,188,000 of the Phase I costs, while subsequent costs would be financed by the development fees (see Section 5.7).

Fire Protection. The development of the proposed Las Positas project would necessitate the construction of three fire stations, one in Phase I, one in Phase III and one in Phase IV. The Phase I station would cost $200,000 to construct; the Phase III station $640,000; and the Phase IV station $200,000. Each would be built on one acre of land. All three stations would require a squad truck, costing $50,000, and a pumper, costing $105,000. In addition to this equipment, the stations built in Phases III and IV would each require a half-ton pickup truck, costing $23,000 each; a ladder truck, purchased in Phase III, costs $400,000.

For the purposes of the current analysis it is assumed that each station would be built in mid-phase. The equipment for the first station would be purchased at the beginning of development and would be operated from an existing fire station until the new station is constructed. An allocation from the Sponsor's Advance would cover $195,000 of the Phase I costs (see Section 5.5).

Sheriff. One sheriff's station would ultimately be needed in Las Positas and would be built in Phase III. The station would be built on one acre of land (see Section 5.5).

Library. Bookmobile service from the Alameda County Library System would be needed to serve the demand resulting from the development of Las Positas until Phase II of development, when a 15,000 square foot library would be built. Until the community reaches a population of 30,000 residents, 10,000 square feet could be used as a community library (through the last years of Phase II and the early years of Phase III) with the remaining 5,000 square feet being put to another community purpose (recreation center, meeting place, etc.). At

TABLE 5.38
LAS POSITAS CSA CAPITAL COSTS AND FINANCING
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in thousands of constant February 1982 dollars)

ITEM	PHASES					
	PRE-DEV'T	I	II	III	IV	TOTAL
COSTS						
SEWAGE TREATMENT SYSTEM (OPTION 1)						
TREATMENT PLANT & PONDS	7,698	5,646	7,729	8008	7,513	36,594
COLLECTION/DISPOSAL SYSTEM	545	817	1,430	809	1,204	4,805
LAND (PLANT AND PONDS)	250	450	500	500	500	2,200
SUBTOTAL: SEWAGE TREATMENT	8,493	6,913	9,659	9,317	9,217	43,599
GROUNDWATER TREATMENT (OPTION 1)						
TREATMENT PLANT	-0-	1,924	-0-	1,036	-0-	2,960
COLLECTION SYSTEM	-0-	684	277	58	365	1,384
LAND	-0-	200	-0-	150	-0-	350
SUBTOTAL: GROUNDWATER TREATMENT		2,808	277	1,244	365	4,694
TREATED WATER PIPING SYSTEM						
PIPING SYSTEM	101	124	428	392	562	11,170
LAND FOR TREATED WATER SYSTEM	580	870	1,460	1,470	1,470	5,850
SUBTOTAL: TREATED WATER	681	994	1,888	1,862	2,032	7,457
POTABLE WATER SYSTEM						
PIPE LINES, PUMPS, STORAGE TANKS	2,179	2,457	2,778	2,531	1,225	1,225
LAND	72	72	64	72	-0-	280
SUBTOTAL: POTABLE WATER	2,251	2,529	2,842	2,603	1,225	11,450
STREET LIGHTING	275	403	765	407	585	2,435
TOTAL COSTS	11,700	13,647	15,431	15,433	13,424	69,635
FINANCING						
LAND						
LAND ACQUISITION FUND	-0-	1,592	2,024	2,192	1,970	7,778
SPONSOR'S ADVANCE	902	-0-	-0-	-0-	-0-	902
SUBTOTAL:	902	1,592	2,024	2,192	1,970	8,680
IMPROVEMENTS						
CAPITAL IMPROVEMENT FUND	-0-	12,055	13,407	13,241	11,454	50,157
SPONSOR'S ADVANCE	10,798	-0-	-0-	-0-	-0-	10,798
SUBTOTAL:	10,798	12,055	13,407	13,241	11,454	60,955
TOTAL	11,700	13,647	15,431	15,433	13,424	69,635
BALANCE	-0-	-0-	-0-	-0-	-0-	-0-

Cost Estimates Prepared by Wilsey & Ham
Table Assembled by McDonald & Associates

TABLE 5.39
ALAMEDA COUNTY CAPITAL COSTS AND FINANCING
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in thousands of constant February 1982 dollars)

ITEM	PHASES					
	PRE-DEV'T	I	II	III	IV	TOTAL
COSTS						
ROAD SYSTEM						
STREETS AND DRAINAGE	1,188	6,635	8,992	3,673	6,146	26,634
OFF-SITE (ALT.A)	-0-	600	2,400	4,050	7,700	14,750
LAND	750	-0-	750	750	750	3,000
SUBTOTAL: ROAD SYSTEM	1,938	7,235	12,142	8,473	14,596	44,384
TRANSIT CENTER					100	100
FIRE						
EQUIPMENT	195	-0-	-0-	575	195	965
STATIONS	-0-	200	-0-	640	200	1,040
LAND	-0-	10	-0-	10	10	30
SUBTOTAL: FIRE	195	210	-0-	1,225	405	2,035
SHERIFF						
STATION	-0-	-0-	-0-	250	-0-	250
LAND	-0-	-0-	-0-	10	-0-	10
SUBTOTAL: SHERIFF	-0-	-0-	-0-	260	-0-	260
LIBRARY						
STRUCTURE	-0-	-0-	2,300	-0-	-0-	2,300
LAND	-0-	-0-	10	-0-	-0-	10
SUBTOTAL: LIBRARY	-0-	-0-	2,310	-0-	-0-	2,310
OTHER GOVERNMENT - RESERVE (LAND)		10	20	-0-	20	50
TOTAL COSTS	2,133	7,455	14,472	9,958	15,121	49,139
FINANCING						
LAND						
LAND ACQUISITION FUND		20	780	770	880	2,450
SPONSOR'S ADVANCE	750	-0-	-0-	-0-	-0-	750
SUBTOTAL:	750	20	780	770	880	3,200
IMPROVEMENTS						
SPONSOR'S ADVANCE	1,383	-0-	-0-	-0-	-0-	1,383
CAPITAL IMPROVEMENT FUND	-0-	7,435	13,692	9,188	14,241	44,556
SUBTOTAL:	1,383	7,435	13,692	9,188	14,241	45,939
TOTAL	2,133	7,455	14,472	9,958	15,121	49,139
BALANCE	-0-	-0-	-0-	-0-	-0-	-0-

Cost Estimates Prepared by Wilsey & Ham
Table Assembled by McDonald & Associates

Phase III, the library would then need to expand into the full 15,000 square feet and provide complete community reference library services. The cost of construction (including mill work and furnishings, but not including land acquisition) for such a facility is estimated at $2.3 million. The new library would be built on one acre of land (see Section 5.5).

Capital costs and financing for the other public agencies providing services to Las Positas are shown on Table 5.40.

Schools. The development of Las Positas would require the construction of new schools for the Livermore Valley Unified School District (LVUSD). In the current analysis it is assumed that these would be provided as follows: two elementary schools (grades kindergarten through 5) in each phase; one middle school (grades 6 through 8) in Phases I, III and IV; and one high school (grades 9 through 12) in Phases I and IV. The high school would not be efficiently utilized until Phase III. It is shown constructed in Phase I because the LVUSD is near capacity at its existing high schools. The LVUSD prefers that Las Positas causes no impact on existing school facilities. Each elementary school would be built on a 10 acre site and would accommodate 600 students; each middle school would require a 20 acre site and would accommodate approximately 1,000 students; and each high school would be built on a 35 acre site and would accommodate approximately 1,500 students. The estimated costs of construction are $2,805,000 for an elementary school, $6,375,000 for a middle school and $10,795,000 for a high school (see Section 5.5).

Parks. Based on current Livermore Area Recreation and Park District service standards, a neighborhood park occupying 10 acres would be needed for every 2,500 people and a community park covering 25 acres for every 22,000 people in Las Positas. These standards would yield a total of 18 neighborhood parks. Assumed phasing is five in Phase I, four in Phase II, five in Phase III, and four in Phase IV. Two community parks would be built: one in Phase II and one in Phase IV. These parks would provide a total of 230 acres. The capital costs for park development would be $250,000 for each neighborhood park and $3,073,000 for each community park (see Section 5.5).

Flood Control. Capital costs for drainage and flood control facilities within the project area were not included in this analysis, although these costs may be considerable. It was assumed that flood control improvements would occur during construction and be financed directly by the individual builders (see Section 5.6).

The proposed financing for capital improvements is derived from two revenue sources: the Public Land Acquisition Fund and the Capital Improvement Fund, both administered by the Las Positas CSA. Together, these two funds would comprise the source of all capital financing for the Las Positas project. Both funds are fully described in the discussion of the proposed financing program, Section 2.7 of this EIR.

TABLE 5.40
SPECIAL DISTRICT CAPITAL COSTS AND FINANCING
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in thousands of constant February 1982 dollars)

ITEM	PHASE					
	PRE-DEV'T	I	II	III	IV	TOTAL
COSTS						
ACFCWCD ZONE 7 FLOOD CONTROL	NOT AVAILABLE					
LVUSD						
ELEMENTARY SCHOOLS	-0-	5,610	5,610	5,610	5,610	22,440
MIDDLE SCHOOLS	-0-	6,375	-0-	6,375	6,375	19,125
HIGH SCHOOLS	-0-	10,795	-0-	-0-	10,795	21,590
LAND	-0-	750	200	400	750	2,100
SUBTOTAL: LVUSD	-0-	23,530	5,810	12,385	23,530	65,255
LARPD						
NEIGHBORHOOD PARKS - DEV'T	-0-	1,250	1,000	1,250	1,000	4,500
- LAND	-0-	500	400	500	400	1,800
COMMUNITY PARKS - DEV'T	-0-	-0-	3,073	-0-	3,073	6,146
- LAND	-0-	-0-	250	-0-	250	500
SUBTOTAL: LARPD	-0-	1,750	4,723	1,750	4,723	12,946
TOTAL COST	-0-	25,280	10,533	14,135	28,253	78,201
FINANCING						
LAND						
LAND ACQUISITION FUND	-0-	1,250	850	900	1,400	4,400
IMPROVEMENTS						
CAPITAL IMPROVEMENT FUND	-0-	24,030	9,683	13,235	26,853	73,801
TOTAL	-0-	25,280	10,533	14,135	28,253	78,201
BALANCE	-0-	-0-	-0-	-0-	-0-	-0-

Cost Estimates Prepared by Wilsey & Ham
Table Assembled by McDonald & Associates

2. Project Impacts - Capital Improvement Costs and Revenues

a. Fund Balance

The key to the success of the two funds is that all costs be adequately covered by dedications, land fees, and development fees. The Sponsor's Advance would pay initial costs and fund balance deficits, and, after development begins, the next increment of capital capacity would always be financed with the development which utilizes the existing capital capacity. For this financing plan to work without producing fund deficits, ccareful coordination would be required between development phasing, sales programs and the capital improvement construction.

There is no way to predict accurately the precise timing of either development or capital improvement costs. The capital fund balances shown on each table are the result of conservative assumptions regarding the timing of development and capital costs. The residential development in each phase is assumed to occur yearly in five equal increments. The commercial and industrial development, being of a smaller overall scale, is assumed to occur in year two and year four of each phase. The fund balances shown are a product of these assumptions plus the estimates of when capital expenditures would occur. Different assumptions would yield different results. For example, if the commercial and industrial development was distributed in equal increments the fund balances would improve; however, the key problem remains that capital costs would probably not be incurred in equal increments, but rather would occur in largely varying amounts from year-to-year. School construction, in particular, appears to be the largest cause of the annual capital cost variations.

Public Land Acquisition Fund. Approximately 36% of the Las Positas land area would be required for public facilities, including schools, parks, open space and public utilities. The proposed source of revenue for land purchases will be a fee exacted when the final map is filed on any subdivided parcel, and deposited in a Public Land Acquisition Fund. When the final map is filed on any subdivided parcel, the developer would be required to dedicate all land needed for public purposes within the subdivision. If less than 36% of the area of the parcel being subdivided were needed for public purposes, the developer would pay an in-lieu fee for the difference. If more than 36% is needed, the developer would be paid fair market value for the difference.

As an example, if the developer owns 100 acres and 30 acres are needed for public land, he would dedicate 30 acres and pay an in-lieu fee of $10,000 x 6 acres as fees, or $60,000. The in-lieu fees would be used to purchase public lands from developers whose subdivisions have more than 36% public lands in their parcels.

The percentage of public lands within each parcel could only be determined when more detailed site plans are developed or the tentative maps for each parcel is prepared. Therefore, for the purpose of this analysis, it is assumed that all developers would pay

the in-lieu fee on their entire developed acreage. Because the charge is on developed acreage, the fee used for the analysis is assumed to be 36/64 of $10,000, or $5,625 per developed acre. (Because the Sponsor would acquire all of the pre-development land and would need to be paid back during project buildout, the figure of $5,625 was adjusted upward. For the analysis, it was also assumed that market rate interest would be paid on the advance. With this adjustment, the fee equals $5,669 per acre; this latter figure was employed on Table 5.41. In addition, $10,000 is the assumed purchase price for each acre of undeveloped land, expressed in 1982 dollars. The actual price may be higher or lower, resulting in higher or lower fees.) A summary of the Public Land Acquisition Fund is shown on Table 5.41.

A review of the "balance" columns on Table 5.41 indicates that the Public Land Acquisition Fund could generally keep pace with required expenditures and produce revenues sufficient to pay back the Sponsor's Advance at the end of the buildout period. However, deficits are shown in several years, and the analysis shown assumes land sales match demands for public lands.

The key assumption of the Public Land Acquisition Fund is the parity between the money paid into the Fund at the time the final map is filed and the demand and cost of required public lands. Actual land costs would obviously vary over time and between specific parcels. The risk is that land purchase contributions made earlier in the buildout period would not be adequate for subsequent public land purchases. This could be a particularly difficult problem when the final acres would be purchased for public uses. If condemnation actions were required, prices for these lands could be above available funds in the Public Land Acquisition Fund. A serious fund deficit could result.

Capital Improvement Fund. The Capital Improvement Fund would finance most of the required major capital improvements. Revenue for the Fund would be derived from a fee levied upon developers at the time building permits were issued. Table 5.42 shows the projected revenues for the Capital Improvement Fund and the distribution of these revenues to the various public service agencies. The amount of the fees would be based, insofar as possible, on the average incremental cost of each additional residential unit or its equivalent in commercial/industrial space.

The estimated cumulative fund balances in Table 5.42 indicate that development fees alone may not be adequate, on an annual basis, to finance the capital program. The cumulative total is sufficient to pay back the Sponsor's Advance and other capital costs, but there are significant annual shortfalls during project buildout. The problem could worsen if any slowdown in the rate of development occurs during the project's first phase -- the time when the market risks for a new, untested location are highest, or if major unforeseen costs were incurred.

TABLE 5.41
PUBLIC LAND ACQUISITION COSTS AND REVENUES
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in thousands of constant February 1982 dollars)

	COSTS						REVENUE				BALANCE	
	CSA	ALAMEDA CO.		SPECIAL DIST.						Sponsor's		
YEAR	(Total)	Roads	Public Bldg.	Schools	Parks	TOTAL COSTS	Sponsor's Advance	Land Fee	TOTAL REV.	Advance Payback	Annual	Cumu-lative
PRE-DEV'T	902	750	0	0	0	1652	1652	0	1652	0	0	0
1985/1986	0	0	0	0	0	0	0	715	715	0	715	715
1986/1987	939	0	20	0	200	1159	0	972	972	0	-187	528
1987/1988	218	0	0	750	100	1068	0	715	715	0	-353	175
1988/1989	217	0	0	0	100	317	0	972	972	0	655	830
1989/1990	218	0	0	0	100	318	0	715	715	0	397	1227
SUBTOTAL	1592	0	20	750	500	2862	0	4089	4089	0	1227	
1990/1991	292	750	30	0	250	1322	0	605	605	0	-717	510
1991/1992	292	0	0	0	100	392	0	941	941	0	549	1059
1992/1993	856	0	0	200	100	1156	0	605	605	0	-551	508
1993/1994	292	0	0	0	100	392	0	941	941	0	549	1057
1994/1995	292	0	0	0	100	392	0	605	605	0	213	1270
SUBTOTAL	2024	750	30	200	650	3654	0	3697	3697	0	43	
1995/1996	294	750	20	0	100	1164	0	594	594	0	-570	700
1996/1997	294	0	0	0	100	394	0	1065	1065	0	671	1371
1997/1998	1016	0	0	400	100	1516	0	594	594	0	-922	449
1998/1999	294	0	0	0	100	394	0	1065	1065	0	671	1120
1999/2000	294	0	0	0	100	394	0	594	594	0	200	1320
SUBTOTAL	2192	750	20	400	500	3862	0	3912	3912	0	50	
2000/2001	367	750	130	0	250	1497	0	610	610	0	-887	433
2001/2002	367	0	0	0	100	467	0	1375	1375	0	908	1341
2002/2003	868	0	0	750	100	1718	0	610	610	233	-1341	0
2003/2004	368	0	0	0	200	568	0	1375	1375	807	0	0
2004/2005	0	0	0	0	0	0	0	610	610	610	0	0
SUBTOTAL	1970	750	130	750	650	4250	0	4580	4580	1650	-1320	
GRAND TOTAL	8680	3000	200	2100	2300	16280	1652	16278	17930	1650		

NOTE: Sponsor's Advance Payback does not equal Sponsor's Advance due to independent rounding.

Cost Estimates Prepared by Wilsey & Ham
Table Assembled by McDonald & Associates

TABLE 5.42
CAPITAL IMPROVEMENT FUND
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in thousands of constant February 1982 dollars)

	COSTS						REVENUE					BALANCE	
	CSA	ALAMEDA COUNTY		SPECIAL DISTRICTS									
YEAR	(Total)	Roads	Public Bldg.	School	Parks	TOTAL COSTS	Sponsor's Advance	Development Fees DU's	DUE's	TOTAL REV.	Sponsor's Advance Payback	Ann.	Cum.
PRE-DEV'T	10798	1188	195	0	0	12181	12181	0	0	12181	0	0	0
1985/1986	0	0	0	0	0	0	0	7213	0	7213	0	7213	7213
1986/1987	8691	2259	200	0	313	11463	0	7204	2454	9658	0	-1805	5408
1987/1988	1121	1659	0	19975	312	23067	0	7221	0	7221	0	-15846	-10438
1988/1989	1121	1659	0	2805	313	5898	0	7204	2454	9658	0	3760	-6678
1989/1990	1121	1659	0	0	312	3092	0	7213	0	7213	0	4121	-2557
SUBTOTAL	12054	7236	200	22780	1250	43520	0	36055	4908	40963	0	-2557	
1990/1991	1136	2598	2300	0	3073	9107	0	7334	0	7334	0	-1773	-4330
1991/1992	1136	2598	0	0	250	3984	0	7358	3208	10566	0	6582	2252
1992/1993	8865	2598	0	2805	250	14518	0	7326	0	7326	0	-7192	-4940
1993/1994	1136	1798	0	2805	250	5989	0	7358	3208	10566	0	4577	-363
1994/1995	1136	1798	0	0	250	3184	0	7334	0	7334	0	4150	3787
SUBTOTAL	13409	11390	2300	5610	4073	36782	0	36710	6416	43126	0	6344	
1995/1996	839	2085	1465	0	250	4639	0	7294	0	7294	0	2655	6442
1996/1997	839	2085	0	0	250	3174	0	7302	4472	11774	0	8600	15042
1997/1998	9883	2085	0	9180	250	21398	0	7294	0	7294	0	-14104	938
1998/1999	839	735	0	2805	250	4629	0	7310	4472	11782	0	7153	8091
1999/2000	839	735	0	0	250	1824	0	7285	0	7285	0	5461	13552
SUBTOTAL	13239	7725	1465	11985	1250	35664	0	36485	8944	45429	0	9765	
2000/2001	985	3462	395	0	3323	8165	0	7326	0	7326	0	-839	12713
2001/2002	985	3462	0	0	250	4697	0	7318	7275	14593	0	9896	22609
2002/2003	8498	3462	0	19975	250	32185	0	7326	0	7326	0	-24859	-2250
2003/2004	985	3462	0	2805	250	7502	0	7326	7275	14601	4849	2250	0
2004/2005	0	0	0	0	0	0	0	7326	0	7326	7326	0	0
SUBTOTAL	11453	13848	395	22780	4073	52549	0	36622	14550	51172	12175	-13552	
GRAND TOT.	60953	41387	4555	63155	10646	180696	12181	145872	34818	192871	12175		

NOTE: Sponsor's Advance Payback does not equal Sponsor's Advance due to independent rounding.

Cost Estimates Prepared by Wilsey & Ham
Table Assembled by McDonald & Associates

The proposed financing plan includes the suggestion that, after development begins, any surplus of revenues compared to cost to the Alameda County General Fund be used to support future capital investment or ongoing costs at Las Positas, or to repay the Sponsor's Advance. Even if such a revenue surplus could be produced by Las Positas, the likelihood of a future Board of Supervisors transferring "net" revenue from the General Fund to a County Service Area is extremely low. The trend in the County's budget has been increased competition among existing agencies for County General Fund revenues. It is unlikely that a proposal to invest in infrastructure for new residents (let alone to reimburse the Sponsor's Advance) would successfully compete with other County demands for increasingly scarce revenues. The fiscal analysis, therefore, assumes no use of "surplus" General Fund revenues for the financing plan.

b. Vulnerability

The principle vulnerability of the Proposed Financing Program is the possibility of inadequate revenue to meet costs, either on an annual basis, as shown on Tables 5.41 and 5.42, or under more negative circumstances, cumulatively. Projected development fee revenue would be adversely affected during a poor housing market (e.g., the present). These slowdowns are not controllable and could come at a time of major demand for capital improvements. The development fees projected and other uncertainties could, in themselves, slow buildout rates as land in the market area that is cheaper to develop is utilized.

Another source of vulnerability would be major underestimates of capital costs for required capital improvements. Major capital facilities often cost more than originally estimated. For example, several components of the proposed capital facilities infrastructure are innovative, and hence all costs are not entirely known. This is particularly true of the proposed wastewater management system. Also, optimistic assumptions are included in the estimates of road capacity required, such that road construction cost estimates may be low. Further, flood control capital costs, which may be considerable, have not been estimated. While fees could be adjusted to meet these and other similar problems, it could prove problematic. Fee adjustments would require a public action. A developer that would be asked to pay substantially more than previous developers to the Public Land Acquisition Fund or the Capital Improvement Fund for an equivalent amount of service could be expected to pursue every administrative, legal and political remedy available. These actions could prove disruptive to the efficient and timely development of the proposed project.

c. Financial Burden

The current analysis of the financial burden of the proposed capital financing plan considers the distribution of costs to the organization or individuals who would actually experience a reduction in income or assets. Table 5.43 describes the cost distribution for

TABLE 5.43
FISCAL IMPACT SUMMARY, PROPOSED FINANCING PROGRAM
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION

IMPACT CATEGORY	IMPACT GROUPS: EXISTING LANDOWNERS	PROJECT DEVELOPERS/ BUILDERS	FUTURE RESIDENTS AND BUSINESSES	PUBLIC AGENCIES	RESIDENTS OF ALAMEDA COUNTY
SPONSOR'S ADVANCE	Sponsor Loses Interest Income on the Advance Funds	Developers Would Pay Back Sponsor's Advance as Part of Development Fees	Costs to Developers Could be Added to the Price of New Homes and Commercial/ Industrial Space	The Sponsor's Advance Provides Start-up Money and Mitigates Any Short-Term Cash Flow Impacts	None
PUBLIC LAND ACQUISITION FUND	Landowners Must Contribute 50% of Land Sale Price to the Public Land Acquisition Fund	Prices Paid for Land Would Include a Component for the Public Land Acquisition Fund	Same As Above	Projected Cashflow Deficits Could Require Other Revenue from Public Agencies	If Alameda County General Fund Revenue is Used to Offset Cashflow Deficits, County Residents Will, in Effect, Subsidize Las Positas
CAPITAL IMPROVEMENT FUND	The Portion of Capital Costs that Cannot Be Passed Forward to Future Residents Could be Deducted from Land Prices	Developers Must Contribute to Capital Improvement Fund Which Would Increase Construction Debt.	Same As Above	Same As Above	Same As Above

Source: McDonald & Associates

the Sponsor's Advance, the Public Land Acquisition Fund and the Capital Improvement Fund.

The land sale price revenues received by existing landowners from developers/builders could reflect the cost that the latter would incur because of imposition of the public land acquisition fee. Because subsequent development costs and sales prices are relatively fixed, the addition of the fee at the early stage of the development process could tend to reduce land sales price returns to the existing landowners.

The developers/builders would be required to carry any costs that are not offset by reduced land prices in their construction financing. This could add as much as $10,000 per residential unit to the construction loan, and subsequently add $1,400 to the cost of the unit (assuming 14% interest on the estimated total development fees carried for a one-year construction cycle). In a weak market, the developer/builder would realize smaller profits due to either rents or lower sales prices, or to an extended carry of the inventory.

A major burden could also fall on future residents and businesses. This would be true under any financing scheme and is appropriate, since they would be the major recipients of the benefits of these improvements. All the capital costs not offset by lowered purchase price for the land would be added directly to the purchase price of the residential, commercial or industrial units. In most cases, the purchases would be conventionally financed. This implies, consistent with much post-Proposition 13 public financing, that public capital infrastructure would be financed at mortgage interest rates, adding to the ultimate cost of these improvements. This would increase the financial burden on Las Positas residents and businesses above the level that would result from municipal bond financing.

The estimated average costs per unit of the major capital improvements for Las Positas are shown on Table 5.44. These costs result from applying the total estimated capital costs in each category to the total number of dwelling units and commercial/industrial dwelling unit equivalents. These costs are only for the major capital improvements. Flood control improvements, local streets and sewer laterals would require an additional amount; this would be roughly equivalent to the costs of the major improvements.

Existing public agencies would be free of any financial burden, assuming that the proposed capital improvement financing plan does not result in an annual or cumulative fund balance deficit. The fund balance and the vulnerability discussions above indicate that these deficits could be a possibility. If they did occur, existing agencies could be required to use other funds to offset deficits in construction cost financing.

Any burden on other residents of Alameda County would result only if the existing public agencies were required to utilize funds to finance capital improvements in Las Positas that were not derived directly

Table 5.44

AVERAGE UNIT COST OF MAJOR CAPITAL IMPROVEMENTS
Las Positas General Plan Amendment Consideration
(All figures are in constant February 1982 dollars)

Capital Facility (Including Land Purchase)	Total Cost All Phases	Average Cost Per Residential Unit or Equivalent
Sewage Treatment System	$ 43,599,000	$1,705
Groundwater Treatment	$ 4,694,000	$ 184
Treated Water Distribution	$ 7,457,000	$ 292
Potable Water System	$ 11,450,000	$ 448
Street Lighting	$ 2,435,000	$ 95
Road System	$ 44,384,000	$1,740
Fire Service	$ 2,035,000	$ 80
Sheriff Station	$ 260,000	$ 10
Library	$ 2,310,000	$ 90
Schools (1)	$ 65,255,000	$3,625
Parks	$ 12,946,000	$ 506
TOTAL:	$196,825,000	$8,775

NOTE:

(1) School per unit cost excludes commercial and industrial dwelling unit equivalents.

Source: McDonald & Associates

from the Las Positas CSA or other revenues that would be directly generated by the proposed development.

d. The Post-Buildout Situation

It is assumed that all major infrastructure would be completed prior to 2005. Capital improvements following buildout would be limited to repair and replacement of the facilities that are required to maintain capacity and efficiency. Hence, no major capital post-buildout impacts are expected.

3. Mitigation Measures

In summary, the key potential impacts of the Proposed Financing Program are:

- The initial burden of the capital costs would fall upon landowners and developers, possibly lowering land prices and limiting profits.

- Costs would also be passed forward to the residents of Las Positas, and most of the cost increase would be financed at mortgage interest rates rather than at municipal bond interest rates.

- There could be some uncertainty regarding fund balance deficits. It is possible that deficits could occur, delaying the capital building program and possibly requiring subsidies from the County or other existing public service agencies.

- The proposed pattern of land use for the proposed Las Positas development, and its phasing, and the proposed financing plan together create a question about the equitable treatment of all landowners. Smaller landowners may have all their land designated for a public use while adjacent land is designated for high density residential.

- The use of a land purchase fee that is directly proportional to purchase price may be legally questioned under Proposition 13. Even if the land fee is judged to be a fee and not an ad valorem tax, it is collectible only at the time that a landowner subdivides, rather than at the time the funds may be needed in order to allow an orderly construction of required capital facilities.

In addition to possible adjustments in the Proposed Financing Program, there also are alternative capital financing approaches available that do not share these risks or potential impacts. Two approaches are suggested as mitigation measures: A conventional special assessment district approach, and a Community Facilities District (permitted by the recently adopted Mello-Roos Community Facilities Act of 1982). A third mitigation measure addresses school construction financing.

Adjustments in the Proposed Financing Program. Potential fund balance impacts of the proposed financing plan could be reduced or eliminated by increasing the Sponsor's Advance and/or eliminating the proposed pay back of the Advance. If the Sponsor (and other landowners who will benefit from the development) agrees to finance all fund balance deficits which may occur during the buildout, the potential impact would be mitigated. The per unit cost of the public land fee and the development fee would be reduced by eliminating the pay back provision.

Special Assessment District. A special assessment district could be established within the proposed Las Positas CSA to generate revenue for the required Capital Improvement Program. The assessment could be paid outright by the landowners, or tax free municipal bonds could be issued for the principal amount, secured by the value of the assessed property.

In California, a "special assessment" can be defined as a legislative charge made against the land for special benefit arising from a local public improvement. Most of the capital investments required during each phase of development at Las Positas clearly would provide a "special benefit" to land at Las Positas. Examples of such investment includes water service, wastewater treatment and open space land for wastewater irrigation. The use of special assessments at Las Positas for those would be practical and within legal precedents and standards of practice that have existed in California for more than 70 years. Use of these assessments to meet off-site capital costs (roadway improvements) would require demonstration of a direct benefit to Las Positas.

Before proceeding with the discussion of special assessments, it is worthwhile to address a concern expressed by Alameda County. The concern is that if a landowner at Las Positas were to default on an obligation to pay a special assessment, this obligation would fall on the taxpayers of Alameda County. Historically, this was a valid concern. The Improvement Bond Act of 1915 -- the Act that would be most applicable at Las Positas -- provided that in the event of default, the entity issuing the bonds could be required to cover the deficiency out of "available funds." In the absence of sufficient amounts of "available funds" the entity was required to levy a tax at a maximum rate of $0.10 per $100 of assessed value throughout its entire jurisdiction to remedy the default. Proposition 13 effectively eliminated this provision and substantially reduced the impact of default on a county, but the remaining extent of contingent liability is not clear. A recent legal opinion noted that:

> "There has been no court decision as to whether the agency still has the liability to advance available funds. We are advising public agencies that this liability may still exist in spite of the effective repeal of the special tax provisions. As a practical matter, bondholders are not relying on the availability of available funds because of the increasing pressure on local agency budgets since

Proposition 13. In order to provide adequate security to the bondholders, it is now the practice to set aside out of bond proceeds a reserve fund varying in amount depending on the risk of delinquency. Public agencies also are making covenants with the bondholders to institute judicial foreclosure proceedings against delinquent property promptly, rather than allowing the property to go through the five-year tax sale and tax deed process.

In summary, the liability of the local agency has been substantially reduced by Proposition 13 and the institution of reserve funds, but some degree of contingent liability may still exist." (R-2)

An additional contingent liability for Alameda County would be a "spill over" of damage to its credit rating in the municipal bond market. In the event of a massive default at Las Positas, even a minor problem could affect the volatile bond market significantly. The probability of such a default should be slight, given the location of the property, the proposed development's market potential, and the analysis and investigation that would need to be completed and published in the course of preparing a bond issue for sale.

If the concern over contingent liability of special assessment bonds can be removed or mitigated, they would provide a preferable alternative to the proposed financing plan. There are four specific advantages of special assessment bond approach:

The first advantage of the special assessment approach is its particular applicability to the proposed Las Positas development. A basic concept of a benefit assessment procedure is that a charge against any land area must reflect the specific benefit that would result from the public improvement. Lands that would benefit only slightly can be charged only slightly. Lands that would not benefit until a later phase can have a levy that reflects the discounted present value of the benefit. In the case of phases that would not be benefited at all by an improvement, but that would be benefited by a subsequent expansion of capacity, several "zones of benefit" could be defined and levies for future expansion imposed at the time that the funds are required to finance that expansion. This advantage would ensure that the burden of capital facilities costs is equitably distributed in Las Positas.

Second, (and presuming that original landowners would not pay the special assessment in cash at the outset, but takes advantage of a municipal bond issue to finance the initial investment) the assessment would continue with the land, as subdivision takes place, and, as the ultimate beneficiary of the improvements occupies the land. This advantage advantage limit the "front end" financing liability of the landowner or developer.

Third, the original and ultimate landowners would have the advantage of using tax-free municipal debt to finance the infrastructure, substantially reducing the ultimate total cost of the infrastructure.

A fourth advantage of a special assessment procedure is that it is an extremely well-established practice, understood by both the bond market and the courts. Special assessment bonds have been successfully used by special districts and counties throughout California for financing capital infrastructure. Use of this well-established proceeding would remove uncertainty, reduce the risk of legal challenge, and, in general, create a situation where major phases of the overall project would have enhanced marketability, because uncertainty and unfamiliarity have been removed.

In spite of the advantages of special assessment bonds, the problem on contingent liability to Alameda County remains. It should be noted that an equivalent amount of risk may be associated with the Proposed Financing Program. Some risk is involved in all investment in future development. The goal of any financing plan should be minimizing this risk, and ensuring an equitable distribution of cost.

Community Facilities District. The Mello-Roos Community Facilities Act of 1982 provides a financing mechanism that has many of the same characteristics as a special assessment district, but that does not expose Alameda County to any contingent liability in the event of default. A Community Facilities District may be used to finance any governmental facility which the legislative body creating the District is authorized to construct, own or operate. In addition, a Community Facilities District can be used to finance the ongoing costs of police and fire service to the public. These services are for the general welfare, rather than offering a special benefit to property.

A Community Facilities District may levy a special tax to finance construction or operations or to finance debt service for a municipal bond issue that was used to construct the facilities. The special tax must be approved by two-thirds of the qualified electors in the District. If the District is uninhabited (defined as having fewer than 12 registered voters), the vote is by landowner with each landowner having one vote for each acre or portion thereof. This special tax may be collected in the same manner as property taxes are collected and may be subject to the same penalties and same procedure and sale in case of delinquency. The Act also states that in the case of delinquency, ". . . another procedure may be adopted and . . . " which would appear to acknowledge the agency's power to institute judicial foreclosure proceedings against delinquent property rather than allowing the property to go through the five year tax sale and tax deed process. There is no provision in the Community Facilities Act for repayment in the event of delinquency other than the procedure described previously. Therefore, Alameda County would not appear to have any contingent liability in the event of default.

Separate zones within a Community Facilities District can be defined, and separate levies can be enacted in each zone. This provision would permit sequential financing of each phase of development at Las Positas. There would be no need to attempt to implement a single comprehensive and universally equitable financing plan at the start.

A Community Facilities District would appear to be an appropriate financing mechanism for the proposed development. A District with separate zones corresponding to the phases of development would be applicable, if the County continues to provide urban services or if some other governmental unit, such as a city, is created to provide urban services. The authority of a Community Facilities District would appear to be applicable if development fees are used to provide infrastructure or if a bond issue is used to provide the basic facilities. Hence, it would be advisable to establish a Community Facilities District regardless of the financing plan ultimately approved.

Establishing a Community Facilities District would also help establish a presumption that the proposed development must "stand on its own two feet" with no access to the Alameda County General Fund to finance municipal services. The landowners within each zone of the District (and, ultimately, the voters in the District) would have a clear responsibility to approve special taxes to pay for anticipated or unanticipated infrastructure or service requirements.

The only apparent drawback to use of a Community Facilities District is that it has not yet been tested in practice. There is no history of court decisions, nor is there an example of the interest rate that the municipal bond market would demand for debt issued via a Community Facilities District. Also, because the imposition of special taxes is required for basic services, the Community Facilities District would be subject to the vote of the existing landowners and/or future residents. These groups may simply vote down special taxes and accept less services or inadequate infrastructure.

The use of either special assessment bonds or bonds authorized under a Community Facilities District would ultimately depend upon whether the municipal bond market would accept the assumption that development would actually take place at Las Positas. The ability to use bond debt for the first phase, when the greatest uncertainty would exist, would require further market research and review by a municipal bond marketing specialist. If there is too much uncertainty about Las Positas for bonds associated with the first phase to find a market (or a market at acceptable terms) a fall-back financing alternative would be required. If the bonds for the first phase were not marketable until Las Positas has begun successful buildout, the project proponent or other landowners could become a "bond buyer of last resort." The proponent would purchase the first issue(s) of bonds at a negotiated sale. Then, as development of Las Positas proceeds and it captures its intended portion of the real estate market, there would be much less uncertainty about the ability of the properties benefited by the bond issues to repay the debt. At that time, the national bond rating services could be asked to re-evaluate the debt and, assuming a favorable rating was received, the original bondholder (i.e., the proponent) could re-sell the bonds in the national bond market.

An alternative approach for public land purchase would be possible if special assessments were used. The CSA could purchase <u>all</u> public use

and non- developed land at fair market value, using the power of eminent domain, when and if necessary. The funds for purchase would come from a bond issue or from assessments from the benefited properties that have development potential.

This procedure would provide assurances that open space or public-use land would be available when required for implementation of the planned development and would assure that all owners who are not allowed to develop would receive market value for their land.

School Construction Financing. The school construction schedule required by the Livermore Valley Unified School District is a major contributor to both the potential overall capital costs and fund balance deficits shown in the Capital Improvement Fund. School construction financing is a State-wide problem, and has become particularly difficult since Proposition 13 eliminated general obligation bonds. In the past election, the State's voters approved Proposition A, which established a $500 million bond program for school construction. Although this particular issue may be utilized in the next several years, it indicates a commitment on the part of State residents to provide financing for school construction. This present bond issue or subsequent issues could provide part or all of the required capital for schools required by to serve the proposed Las Positas development. If Las Positas is approved, the School District, the Project proponent and the County should coordinate their efforts toward receiving State school bond financing.

ONGOING COSTS AND REVENUES

Las Positas CSA. The proposed Las Positas CSA would finance the ongoing operation and maintenance of the sewage system, water system and street lighting system in Las Positas. The CSA would also administer the capital funds distributed to other agencies. Revenues for the ongoing costs would be entirely derived from user charges. A summary of ongoing costs and revenues for the CSA shown on Table 5.45. The CSA would be administered by the Alameda County Public Works Department.

Ongoing costs for administration of the CSA would include management of the enterprise activities and management of the Public Land Acquisition Fund and the Capital Improvement Fund. It is typical that CSA administrative expenses equal from 5% to 10% of total operating costs. Five percent of operating cost in 1985/86, for example, would equal $83,000. This amount seems reasonable since at least one full-time administrator would be required, plus legal, accounting, and general office support. In addition to these administrative costs, Transportation System Management (TSM) coordination costs are included. These costs are assumed to be zero in Phase I, $50,000 per year in Phase II, $75,000 per year in Phase III, and $100,000 per year in Phase IV. Administration costs plus TSM costs are reflected by the total administration costs in Table 5.45. Pre-development administration costs are as follows: $50,000 in 1983/84 and $50,000 in 1984/85 to cover the County's administration costs related to establishing the CSA; and $25,000 in 1983/84 and

TABLE 5.45
OPERATING AND MAINTENANCE COSTS
LAS POSITAS CSA
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in thousands of constant February 1982 dollars)

YEAR	COSTS						TOTAL COSTS
	ADMIN. INCLUDES TSM COORD.	SEWER SYSTEM OPT. 1	GROUND WATER TRTMNT	TREATED WATER	POTABLE WATER	STREET LIGHTING	
PRE-DEV'T	150	-0-	-0-	-0-	-0-	-0-	150
1985/1986	83	757	275	34	508	91	1,748
1986/1987	83	758	275	34	508	91	1,749
1987/1988	83	758	275	34	508	91	1,749
1988/1989	83	758	275	34	508	91	1,749
1989/1990	83	758	275	33	508	91	1,749
SUBTOTAL	415	3,789	1,375	169	2,540	455	8,744
1990/1991	206	1,455	275	88	1,028	276	3,328
1991/1992	206	1,455	275	88	1,028	276	3,328
1992/1993	206	1,455	275	87	1,028	276	3,327
1993/1994	206	1,455	275	87	1,028	276	3,327
1994/1995	206	1,455	275	87	1,028	276	3,327
SUBTOTAL	1,030	7,275	1,375	437	5,140	1,380	16,637
1995/1996	303	1,946	446	138	1,474	556	4,863
1996/1997	303	1,946	446	137	1,474	556	4,862
1997/1998	303	1,946	446	137	1,474	556	4,862
1998/1999	303	1,946	446	137	1,474	556	4,862
1999/2000	303	1,946	446	137	1,474	556	4,862
SUBTOTAL	1,515	9,730	2,230	686	7,370	2,780	24,311
2000/2001	390	2,275	446	194	1,970	923	6,198
2001/2002	390	2,275	446	194	1,970	923	6,198
2002/2003	390	2,275	446	194	1,970	923	6,198
2003/2004	390	2,275	446	194	1,970	923	6,198
2004/2005	390	2,275	446	193	1,970	923	6,197
SUBTOTAL	1,950	11,375	2,230	969	9,850	4,615	30,989
TOTAL	4,905	32,169	7,210	2,261	24,900	9,230	80,675

Cost Estimates Prepared by Wilsey & Ham and McDonald & Associates
Table Formatted by McDonald & Associates

$25,000 in 1984/85 to cover the County's public works costs to establish the CSA.

All ongoing revenues to the CSA would be derived from user charges for services provided by the CSA. These charges would be collected for each specific service and would cover the operating costs of that service, plus an amount used for replacement or modernization costs, as required, and administrative overhead.

Ongoing revenues for the treated water system would come from selling the water to the park district and the school district for irrigation purposes. These revenues are expected to average $49,000 per year in Phase I, $80,000 per year in Phase II, $65,000 per year in Phase III and $82,000 per year in Phase IV.

Table 5.46 shows a summary of these revenue sources.

1. Impacts

a. Fund Balance

Table 5.46 also shows the fund balances that would develop from the projected operating costs and revenues of the Las Positas CSA. Any potential annual CSA operating budget deficits would be offset by a portion of the Sponsor's Advance set aside as a contingency fund for this purpose. Table 5.46 shows the potential for deficits in 1985/86 ($592,000) and 1986/87 ($18,000). Hence, an amount equivalent to the sum of these deficits would be required in the contingency fund. Over time, the fund balances improve and during the later phases surpluses are indicated. These surpluses would not, in fact, exist. They would either be eliminated by reducing user charges or allocated to the Capital Improvement Fund.

b. Vulnerability

User charges are a well-established, practical, and flexible manner in which ongoing utility costs can be financed. It is unlikely that user fees would be vulnerable to the various uncertainties faced by Las Positas. Costs and revenues are directly linked, hence a slowdown in buildout would reduce both costs and revenues proportionately.

Vulnerability would exist if the proposed user fees were unusually high or inequitable. However, as shown in the subsequent burden analysis, these costs appear reasonable.

c. Financial Burden

Existing landowners would not be affected by the CSA's ongoing costs and revenues, nor would the project developers or builders, with a single exception.

Ultimately all CSA operating costs would be financed by user charges from residents and businesses within Las Positas.

TABLE 5.46
SUMMARY OF OPERATING REVENUE AND BALANCE
LAS POSITAS CSA
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in thousands of constant 1982 dollars)

YEAR	REVENUE							BALANCE	
	SEWER FEES (TOTAL OF DU'S + DUE'S)	TREATED WATER SALES	POTABLE WATER SALES	STREET LIGHT ASSESS-MENT	SPONSOR'S ADVANCE	TOTAL REVENUE	TOTAL COST	ANNUAL	CUMU-LATIVE
PRE-DEV'T	-0-	-0-	-0-	-0-	150	150	150	-0-	-0-
1985/1986	320	49	696	91	592	1,748	1,748	-0-	-0-
1986/1987	832	49	696	91	81	1,749	1,749	-0-	-0-
1987/1988	1,345	49	696	91		2,181	1,749	432	432
1988/1989	1,665	49	696	91		2,501	1,749	752	1,184
1989/1990	1,986	49	696	91		2,822	1,749	1,073	2,257
SUBTOTAL	6,148	245	3,480	455		10,328	8,744		
1990/1991	1,862	80	1,412	276		3,360	3,328	302	2,559
1991/1992	2,215	80	1,412	276		3,983	3,328	655	3,214
1992/1993	2,465	80	1,412	276		4,233	3,327	906	4,120
1993/1994	2,908	80	1,412	276		4,676	3,327	1,349	5,469
1994/1995	3,158	80	1,412	276		4,926	3,327	1,599	7,068
SUBTOTAL	12,608	400	7,060	1,380		21,448	16,637		
1995/1996	3,407	65	1,982	556		6,010	4,863	1,147	8,215
1996/1997	3,924	65	1,982	556		6,527	4,862	1,665	9,880
1997/1998	4,173	65	1,982	556		6,776	4,862	1,914	11,794
1998/1999	4,690	65	1,982	556		7,293	4,862	2,431	14,225
1999/2000	4,398	65	1,982	556		7,541	4,862	2,679	16,904
SUBTOTAL	21,132	325	9,910	2,780		34,147	24,311		
2000/2001	5,187	82	2,696	923		8,888	6,198	2,690	19,594
2001/2002	5,873	82	2,696	923		9,574	6,198	3,376	22,970
2002/2003	6,123	82	2,696	923		9,824	6,198	3,626	26,596
2003/2004	6,809	82	2,696	923		10,510	6,198	4,312	30,908
2004/2005	7,059	82	2,696	923		10,760	8,399	4,563	35,471
SUBTOTAL	31,051	410	13,480	4,615		49,556	44,324		
TOTAL	70,939	1,380	33,930	9,230	823	115,479	105,824		

Cost and Revenue Estimates Prepared by Wilsey & Ham and McDonald & Associates
Table Assembled by McDonald & Associates

The average monthly sewer fees are estimated to be $30 per dwelling unit and dwelling unit equivalent in Phase I, and $23 per dwelling unit and dwelling unit equivalent in the final three phases and the years following buildout.

Average monthly user charges for the potable water system are expected to amount to $13 in Phase I, $13 in Phase II, $12 in Phase III and $12 in Phase IV and the years following buildout.

A benefit assessment would be charged to cover the costs of street light operation and maintenance. The revenue from the benefit assessment would equal the operating costs plus an amount required for repair, replacement and administrative overhead. The average per unit charge for street lights would be approximately $50 per year throughout buildout and thereafter.

Existing public agencies could be affected by the creation and operation of the CSA. The two key agencies would be the County Administrator's Office and the County Public Works Department. Over time, increased general purpose revenues from Las Positas would offset this burden, but initially a good deal of effort would be required to establish and maintain the CSA. The Planning Department would also be affected, although most of its services should be offset directly by charges for services rendered. The Board of Supervisors would experience an increased workload, both in the creation of Las Positas and in its maintenance. So long as Las Positas remains a CSA, the Board of Supervisors would remain the governing body for the area. Essentially, the Board of Supervisors would be managing an urbanizing area, with all the associated citizen complaints, planning issues, etc. All major actions regarding construction contracts, fund management and adjustments of user charges would be decided by the Board of Supervisors.

The County Administrator, Public Works, and Planning Department could add staff to offset impacts on their level of service to other Alameda County residents. The Board of Supervisors' time and agenda, however are relatively fixed resources. Insofar as the Las Positas CSA would impinge upon the Board's agenda, other County issues may not receive timely attention, resulting in an impact upon other County residents.

d. <u>The Post-Buildout Situation</u>

Following buildout the ongoing costs and revenues of the CSA should stabilize. This would be true regardless of the form of local government which ultimately administers Las Positas, since all utility costs would be covered by user charges.

2. Mitigation Measures

Impacts related to operation and maintenance of the Las Positas CSA include:

- Potential fund balance deficits during the first few years of project buildout.
- Potential impacts upon the County Board of Supervisors.

The potential fund balance deficits could be offset by an allocation from the Sponsor's Advance to a contingency fund adequate to cover the potential deficits. The fiscal analysis shows the need for approximately $673,000 for this purpose, hence the Sponsor's Advance for capital improvements would need to be increased by a similar amount. The advance for operating funds could be repaid when the operating funds balance improves with the addition of new housing and commercial units.

The impact on the Board of Supervisors, at least for the first few years of the project, appears unavoidable. However, once a population base were established within Las Positas, a Community Services District could be formed. A Community Services District (CSD) would administer all the services included in the CSA, but would be administered by a locally elected Board of Directors rather than the Alameda County Board of Supervisors. It may even be preferable to establish a CSD from the beginning, since a CSD may be operated either by the Board of Supervisors or a locally adopted board. This approach would make the transition less administratively cumbersome. The CSD would be equal to the CSA in its abilities to implement the Proposed Financing Program, or the Mitigated Financing Plan, including the Community Facilities District.

ALAMEDA COUNTY GENERAL GOVERNMENT

Alameda County would provide key public services to Las Positas, including those provided on a County-wide basis, such as general administration, public health, and social services, as well as urban services typically provided by municipal governments, such as police protection, fire protection, road maintenance and library services.

These services would be administered and financed through four funds maintained by Alameda County: the General Fund, the Road Fund, the Library Fund, and the Structural Fire Fund. The following analysis considers each of these funds independently.

Operating costs and revenues were estimated separately for each of the Funds. Procedures for estimating costs and revenues utilized the Alameda County Final Budget, Fiscal Year 1981/82 (R- 4) and selected interviews with representatives of the County Administrator's Office and other County agencies.

General Fund. Services financed by the General Fund are divided into four categories: general government, health services, social services and sheriff's protection.

The general government category includes an aggregate of County-wide administrative services provided by Alameda County that were estimated on a per capita basis. These general government categories include: finance, counsel, sheriff, civil division and County-wide services, elections, recorder, courts and planning. Budget items in the Revenue Sharing and Fish and Game Funds were also included in this category. The estimated per capita cost for these services is $142.15, and was assumed to be constant over the projection period.

The legislative/administrative costs were estimated separately and were included with the costs of the Las Positas CSA.

Health services costs were estimated by developing a net county cost per capita. Revenue sources were reviewed to determine the likelihood of increased general purpose revenue contributions that would correspond with the increased cost. For example, no additional state aid is anticipated for alcohol and drugs or mental health programs. Increased costs in this program would require increased County funding. On a County-wide basis, future population is anticipated to impose health services costs in excess of state and federal aid and fee revenues by $48.95 per capita. Residents of the proposed Las Positas development, however, would (at least initially) impose lower-than-average requirements for County financing of health services. The incomes of Las Positas residents would support private medical insurance coverage, relieving the County of approximately half of its overall burden on a County-wide per capita basis. A figure of $25 per capita was used for the Las Positas project.

Social services costs were estimated by developing a net County cost based on County experience in comparable areas. Actual caseloads of residents from Livermore and Pleasanton/Dublin as a percentage of total County caseloads were compared to the populations of these same areas as a percentage of the total County population. Net County-wide costs for these comparable areas were developed for each public assistance budget unit. The aggregate net cost for public assistance to Las Positas was estimated at $5.61 per capita.

Development as proposed, in Las Positas would contribute to the total operating expense for sheriff protection in Alameda County. The cost for staffing, supplies and other costs associated with patrol services was calculated by dividing the amount budgeted for sheriff protection to unincorporated areas in Alameda County (FY 1981/82), by the population in the unincorporated areas (124,600). The average per capita cost was $54.36. (County-wide sheriff's services were included in the general government analysis.)

The General Fund revenues that would be generated by development of Las Positas include property tax, sales tax, state shared revenue, and other County General Fund revenues. A projection of these revenues is shown on Table 5.47.

TABLE 5.47
ALAMEDA COUNTY GENERAL FUND ANALYSIS: REVENUE
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	Property Tax	Property Transfer Tax	Sales Tax	Fines & Forfeits	Other General Revenue	Cig-arette Tax	Vehicle In-Lieu Tax	TOTAL REVENUE
1985/1986	36400	89600	32600	10100	57700	2900	32500	261800
1986/1987	393400	143400	65200	20200	115300	5400	65000	807900
1987/1988	955300	107700	97800	30400	173000	7600	97500	1469300
1988/1989	1299800	161400	130400	40500	230600	9400	130000	2002100
1989/1990	1827900	125400	163000	50600	288300	11000	162500	2628700
SUBTOTAL	4512800	627500	489000	151800	864900	36300	487500	7169800
1990/1991	2142000	129100	195100	60600	345100	12300	194600	3078800
1991/1992	2430500	196700	227400	70700	402200	13400	226800	3567700
1992/1993	2966700	147900	259500	80600	459000	14400	258800	4186900
1993/1994	3232200	215600	291800	90700	516000	15000	291000	4652300
1994/1995	3750300	166900	323900	100700	572900	15600	323000	5253300
SUBTOTAL	14521700	856200	1297700	403300	2295200	70700	1294200	20739000
1995/1996	4000600	176300	355400	110400	628600	16000	354400	5641700
1996/1997	4255800	266100	386900	120200	684300	16300	385800	6115400
1997/1998	4857300	196600	418400	130000	739900	16400	417200	6775800
1998/1999	5095700	286500	449900	139900	795700	16500	448600	7232800
1999/2000	5683200	216700	481400	149600	851300	16500	480000	7878700
SUBTOTAL	23892600	1142200	2092000	650100	3699800	81700	2086000	33644400
2000/2001	5907800	222200	512200	159100	905800	16400	510700	8234200
2001/2002	6107900	373900	542900	168700	960200	16200	541400	8711200
2002/2003	6929700	244800	573800	178300	1014700	16100	572100	9529500
2003/2004	7118600	396700	604600	187900	1069200	15800	602800	9995600
2004/2005	7921100	267500	635400	197400	1123700	15500	633600	10794200
SUBTOTAL	33985100	1505100	2868900	891400	5073600	80000	2860600	47264700

Source: McDonald & Associates

Property taxes were estimated by a mathematical model which simulates the limitations imposed by Proposition 13 (Jarvis-Gann Initiative) on assessed property values. The value of the property that does not change ownership is limited to an increase of 2% per year in nominal dollars. Annual inflation in excess of 2% devalues the purchasing power of the tax received from the property until a change in ownership occurs and the property is reassessed at its sale price. Annual turnover rates were assumed at 10% (once every 10 years) for residential properties, 5% for commercial properties. No turnover was assumed for industrial properties. An inflation rate of 7% was assumed.

Property value on vacant land was assumed to increase from a base average value of $1,900 per acre to a pre-build present value of $10,000 per acre when the land changes ownership. A turnover of 5% was assumed for vacant properties.

Property tax is limited to 1% of total property value. No deduction was made for Homeowners Property Tax Relief since the state returns revenue to the County to offset revenue lost to the Homeowners' Property Tax Relief.

The property tax was apportioned to various jurisdictions according to the existing property tax apportionment factors for Tax Rate Area #64001. The property tax revenue was assumed to accrue to the jurisdictions in the year following the incremental increase in property value.

Property transfer tax was estimated by applying the rate of $1.10 per $1000 value against all property sales. Property transfer tax is generated for first-time sales and for resales. Resales are assumed to occur at the turnover rates as given in the discussion of the property tax.

Sales taxes were estimated by assuming an annual per capita expenditure of $7000 in taxable sales. The state levies a 6-1/2% sales tax in Alameda County (4-3/4% State, 1% City/County, 1/4% TDA, 1/2% BART). The 1% City/County share is returned to the local jurisdiction based on situs of sales. The County receives all of this revenue if the sale occurs within the unincorporated area of the County. Cities in Alameda County share 5% of the sales tax revenue with the County. A "local capture rate" for Los Positas residents of 20% was assumed to occur in the unincorporated area of the County, while a 50% capture rate would occur in the incorporated areas such as Livermore and Dublin; and 30% leakage into other counties was also assumed.

Vehicle code fines and forfeitures were estimated at $4.35 on a comparable area basis (the Livermore-Pleasanton Judicial District). The total District receipts from Budget Unit 3100 and 3200 (before disbursements to the cities) were divided by the district population. This figure was then adjusted to account for revenues dedicated to health programs.

Other general revenue includes miscellaneous charges for services, civil process services, and miscellaneous licenses, permits and taxes, and budget items from the Revenue Sharing and Fish and Game Funds. Other general revenue was estimated by aggregating these revenue sources for a per capita amount of $25.38.

Cigarette tax, which is a state shared revenue, was estimated by simulating the actual workings of the state subvention which compares the growth in unincorporated taxable retail sales in Alameda County to taxable retail sales in all unincorporated areas of the State. The subvention is based on a tax on cigarettes of ten cents per package, of which approximately 30% is shared with local governments. Since the tax is based on the number of packages sold rather than on the price of the package, the per capita subvention declines in constant dollar terms.

Vehicle in-lieu tax was estimated at $13.96 per capita. No reduction from the State Controller's 1982/83 per capita estimate (deflated to 1982 dollars) was assumed for incremental population. When the State Legislature reduced vehicle in-lieu entitlements to cities and counties to help balance the State budget, the reductions were stated in terms of absolute amounts. This added population would increase the County's entitlement by the full per capita amount.

Reductions in vehicle in-lieu fees and other state-shared revenues are considered in the vulnerability section of this analysis.

Table 5.48 shows Alameda County General Fund costs compared with projected revenues.

The Alameda County Road Fund, administered by the Public Works Department finances operation and maintenance costs for County roads. Operating costs for streets and drainage in Las Positas were estimated to be $2,000 per mile per year in Phase I, $5,000 per mile per year in Phase II and $8,000 per mile per year in Phases III and IV and the ten-year period after buildout. The per-mile costs escalate over time because the cost of maintenance increases as the streets and drainage system age.

Las Positas would require 5.98 miles of major new roads in Phase I, 6.95 miles in Phase II, 3.28 miles in Phase III and 4.79 miles in Phase IV. In addition to the major roads, streets averaging 50 feet wide would cover 20 percent of the total residential acreage and 15 percent of the total commercial and industrial acreage. These streets would be added as the acreage is developed. Total operating costs for streets and drainage are shown in Table 5.49.

Revenues for the Road Fund are principally derived from two sources that are related to population growth: State of California fuel taxes and local vehicle code fines and forfeitures. State fuel taxes were estimated by a model which simulates the workings of the State Streets and Highway Code Sections 2104 and 2106 as amended by Senate Bill 215. Revenues from taxes on gasoline and diesel fuel are

TABLE 5.48
ALAMEDA COUNTY GENERAL FUND ANALYSIS: COSTS AND BALANCE
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	COSTS						BALANCE	
	General Govt.	Health Net Cost	Social Services	Sheriff Patrol	TOTAL COSTS	TOTAL REVENUE	ANNUAL	CUMULATIVE
1985/1986	331000	58200	13100	126600	528900	261800	-267100	-267100
1986/1987	661700	116400	26100	253000	1057200	807900	-249300	-516400
1987/1988	993200	174700	39200	379800	1586900	1469300	-117600	-634000
1988/1989	1323800	232800	52200	506200	2115000	2002100	-112900	-746900
1989/1990	1654900	291000	65300	632800	2644000	2628700	-15300	-762200
SUBTOTAL	4964600	873100	195900	1898400	7932000	7169800	-762200	
1990/1991	1981400	348500	78200	757700	3165800	3078800	-87000	-849200
1991/1992	2308900	406000	91100	882900	3688900	3567700	-121200	-970400
1992/1993	2635200	463500	104000	1007700	4210400	4186900	-23500	-993900
1993/1994	2962700	521100	116900	1132900	4733600	4652300	-81300	-1075200
1994/1995	3289200	578500	129800	1257700	5255200	5253300	-1900	-1077100
SUBTOTAL	13177400	2317600	520000	5038900	21053900	20739000	-314900	
1995/1996	3608600	634700	142400	1379900	5765600	5641700	-123900	-1201000
1996/1997	3928600	691000	155000	1502200	6276800	6115400	-161400	-1362400
1997/1998	4248000	747100	167600	1624400	6787100	6775800	-11300	-1373700
1998/1999	4568400	803500	180300	1746900	7299100	7232800	-66300	-1440000
1999/2000	4887500	859600	192900	1868900	7808900	7878700	69800	-1370200
SUBTOTAL	21241100	3735900	838200	8122300	33937500	33644400	-293100	
2000/2001	5200400	914600	205200	1988600	8308800	8234200	-74600	-1444800
2001/2002	5512900	969600	217600	2108000	8808100	8711200	-96900	-1541700
2002/2003	5825700	1024600	229900	2227700	9307900	9529500	221600	-1320100
2003/2004	6138600	1079600	242300	2347300	9807800	9995600	187800	-1132300
2004/2005	6451500	1134600	254600	2467000	10307700	10794200	486500	-645800
SUBTOTAL	29129100	5123000	1149600	11138600	46540300	47264700	724400	

Source: McDonald & Associates

Table 5.49
ALAMEDA COUNTY ROAD FUND ANALYSIS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	ROAD MAINT. COSTS	REVENUES			BALANCE	
		Highway Users Tax	Vehicle Code Fines	TOTAL	ANNUAL	CUMULATIVE
1985/86	21,500	35,200	7,000	42,200	20,700	20,700
1986/87	32,800	70,700	14,000	84,700	51,900	72,600
1987/88	42,400	93,500	21,000	114,500	72,100	144,700
1988/89	53,800	117,300	27,900	145,200	91,400	236,100
1989/90	63,400	131,000	34,900	165,900	102,500	338,600
SUBTOTAL	213,900	447,700	104,800	552,400	338,600	
1990/91	213,300	140,900	41,800	182,700	-30,600	308,000
1991/92	239,000	153,800	48,700	202,500	-36,500	271,500
1992/93	259,200	158,300	55,600	213,900	-45,300	226,200
1993/94	284,800	165,600	62,500	228,100	-56,700	169,500
1994/95	305,100	166,200	69,400	235,600	-69,500	100,000
SUBTOTAL	1,301,500	784,800	278,000	1,062,800	-238,600	
1995/96	545,900	228,500	76,200	304,700	-241,200	-141,200
1996/97	590,400	234,000	82,900	316,900	-273,500	-414,700
1997/98	622,300	228,300	89,700	318,000	-304,300	-719,000
1998/99	666,500	229,600	96,400	326,000	-340,500	-1,059,500
1999/00	698,300	221,900	103,100	325,000	-373,300	-1,432,800
SUBTOTAL	3,123,400	1,142,300	448,300	1,590,600	-1,532,800	
2000/01	769,000	213,600	109,800	323,400	-445,600	-1,878,400
2001/02	821,900	215,300	116,300	331,600	-490,300	-2,368,700
2002/03	854,700	215,700	122,900	338,600	-516,100	-2,884,800
2003/04	907,800	214,600	129,600	344,200	-563,600	-3,448,400
2004/05	940,600	194,400	136,200	330,600	-610,000	-4,058,400
SUBTOTAL	4,294,100	1,033,500	614,800	1,668,400	-2,625,600	

Source: McDonald & Associates

distributed to counties based on a complex set of factors including: county vehicle registration in proportion to statewide vehicle registration, and assessed property value in the county unincorporated area in proportion to the entire county assessed value. The estimate of fuel tax was based on a simulation of these factors.

The Road Fund receives a portion of the fines and forfeitures collected in Alameda County. It was estimated that approximately $3.00 per capita would accrue to the Road Fund from this source.

Library Fund. Operating costs for library service at Las Positas would increase over time according to the type and level of service provided. It is assumed that bookmobile service would be provided to Las Positas from 1985/86 through 1990/91 at an annual operating cost of $30,000. A permanent 10,000 square foot library would then operate on the project site beginning in 1991/92. Operating costs of this facility would be $450,000 per year. A 15,000 square foot community reference library (a 5,000 square foot expansion of the 10,000 square foot facility) would serve the Las Positas population beginning in 1996/97 at an annual cost of $550,000 per year. Impact on the Dublin branch of the County Library would be minimal. Livermore Public Library would absorb most of the unmet service demands (see discussion in the subsequent section PUBLIC SERVICE AGENCIES OTHER THAN ALAMEDA COUNTY).

Ongoing revenues for the operation of the Alameda County Library System would be derived from property tax revenues resulting from the development of Las Positas. In Tax Code Area 64001, the County Library System is allocated 5.36 percent of the property tax plus an additional 0.19 percent for the County Library Special Taxing Zone, for a total of 5.55 percent. The library service operating costs and revenues for Las Positas are shown on Table 5.50.

The Alameda County Board of Supervisors is responsible for the Special District Augmentation Fund which allows the County to redistribute among affected special districts some of the property tax revenues allocated to those districts. A portion of the property tax revenues collected for each participating district is transferred to the Augmentation Fund. The County Board of Supervisors annually redistributes the money in the Augmentation Fund among the participating districts. This redistribution is at the discretion of the Board of Supervisors. The present analysis assumes that the Library System would continue to receive the 5.55 percent of the one percent of assessed valuation property tax, as allocated by the Library Fund's tax apportionment factor. (In other words, it is assumed that the library system has no net transfer either from or to the Special District Augmentation Fund.) In reality, the Library Fund may contribute more to the Augmentation Fund that it receives in redistribution of the Augmentation Fund.

Structural Fire Fund. The proposed public services plan assumes that fire protection would be provided by the County Fire Patrol. (The Structural Fire Fund, in fact, applies only to rural unincorporated areas not in an urban level fire protection district. It is

TABLE 5.30
ALAMEDA COUNTY LIBRARY FUND ANALYSIS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	COSTS OF LIBRARY SERVICES	REVENUES (Property Tax)	BALANCE ANNUAL	BALANCE CUMULATIVE
1985/1986	30000	4800	-25200	-25200
1986/1987	30000	51900	21900	-3300
1987/1988	30000	125800	95800	92500
1988/1989	30000	171300	141300	233800
1989/1990	30000	240900	210900	444700
SUBTOTAL	150000	594700	444700	
1990/1991	30000	282300	252300	697000
1991/1992	450000	320300	-129700	567300
1992/1993	450000	390900	-59100	508200
1993/1994	450000	426000	-24000	484200
1994/1995	450000	494100	44100	528300
SUBTOTAL	1830000	1913600	83600	
1995/1996	450000	527100	77100	605400
1996/1997	550000	560800	10800	616200
1997/1998	550000	640000	90000	706200
1998/1999	550000	671300	121300	827500
1999/2000	550000	748900	198900	1026400
SUBTOTAL	2650000	3148100	498100	
2000/2001	550000	778500	228500	1254900
2001/2002	550000	804800	254800	1509700
2002/2003	550000	913100	363100	1872800
2003/2004	550000	938000	388000	2260800
2004/2005	550000	1043700	493700	2754500
SUBTOTAL	2750000	4478100	1728100	

Source: McDonald & Associates

therefore an inappropriate funding source at Las Positas. See mitigation measures for further discussion.) The initial operating costs for fire protection are estimated to be $450,000 per station per year. Operating costs for the first station were assumed to be incurred for the entire five years of the first phase because the equipment and staff would be required from the beginning of development. Operating costs and revenues by year are shown on Table 5.51.

The County Fire Patrol receives an allocation of 6.77 percent of the property tax through the County Structural Fire Fund. Part of this allocation is subject to appropriation to the Augmentation Fund, but it was assumed that 6.77% of property tax revenues generated at Las Positas would remain in the Stuctural Fire Fund. This assumption may appear conservative since fire protection agencies normally receive a high priority when Augmentation Fund monies are allocated. The assumption of no additional monies from the Augmentation Fund was consistent with the concept that the Augmentation Fund was originally created to cure fiscal imbalances for existing public services. Public services for a new service population would not necessarily be considered eligible for Augmentation Fund financing.

1. Impacts

a. Fund Balances

It is important to consider the fund balances for all of the County-administered Funds. Table 5.52 shows the annual fund balances projected for each of the County Funds. The following paragraphs describe the fund balances in more detail.

General Fund. On the basis of the fiscal assumptions included in the General Fund analysis, the development of Las Positas would result in negative fund balances for General Fund services in 16 of the 20 years being analyzed. The General Fund begins to show an annual surplus during the final phase but, in the first 14 years, the tax base is not sufficient to offset the estimated costs of County services.

The General Fund deficit results in part from the assumptions about cost, but is also the result of Las Positas' high proportion of proposed residential use compared to the proposed commercial and industrial uses. Commercial and industrial land uses are usually essential to produce a positive fund balance on a large project site such as Las Positas.

It should be noted that the analysis does not consider the fact that industrial and commercial land uses beyond the project boundaries may be generated or facilitated by residents or businesses of the proposed Las Positas development. The residents may be employed at new tax-producing industrial facilities, for example. Insofar as revenue-producing off-site land uses associated with Las Positas are located in Alameda County, particularly the unincorporated portion of the County, the estimated General Fund deficits could be offset.

Table 5.51

ALAMEDA COUNTY STRUCTURAL FIRE FUND ANALYSIS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	COSTS OF FIRE PROTECTION	REVENUES Property Tax	BALANCE ANNUAL	BALANCE CUMULATIVE
1985/86	450,000	5,900	-444,100	-444,100
1986/87	450,000	63,300	-386,700	-830,800
1987/88	450,000	153,600	-296,400	-1,127,200
1988/89	450,000	208,900	-241,100	-1,368,300
1989/90	450,000	293,800	-156,200	-1,524,500
SUBTOTAL	2,250,000	725,500	-1,524,500	
1990/91	450,000	344,300	-105,700	-1,630,200
1991/92	450,000	390,700	-59,300	-1,689,500
1992/93	450,000	476,800	26,800	-1,662,700
1993/94	450,000	519,600	69,600	-1,593,100
1994/95	450,000	602,800	152,800	-1,440,300
SUBTOTAL	2,250,000	2,334,200	84,200	
1995/96	735,000	643,000	-92,000	-1,532,300
1996/97	735,000	684,000	-51,000	-1,583,300
1997/98	735,000	780,700	45,700	-1,537,600
1998/99	735,000	819,000	84,000	-1,453,600
1999/00	735,000	913,500	178,500	-1,275,100
SUBTOTAL	3,675,000	3,840,200	165,200	
2000/01	1,245,000	949,600	-295,400	-1,570,500
2001/02	1,245,000	981,700	-263,300	-1,833,800
2002/03	1,245,000	1,111,500	-133,500	-1,967,300
2003/04	1,245,000	1,144,100	-100,900	-2,068,200
2004/05	1,245,000	1,273,100	28,100	-2,040,100
SUBTOTAL	6,225,000	5,460,000	-765,000	

Source: McDonald & Associates

TABLE 5.52
SUMMARY OF ANNUAL FUND BALANCES- ALL FUNDS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

	FUND BALANCES			
YEAR	GENERAL FUND	ROAD FUND	LIBRARY FUND	FIRE FUND
1985/1986	-267100	20700	-25200	-444100
1986/1987	-249300	51900	21900	-386700
1987/1988	-117600	72100	95800	-296400
1988/1989	-112900	91400	141300	-241100
1989/1990	-15300	102500	210900	-156200
SUBTOTAL	-762200	338600	444700	-1524500
1990/1991	-87000	-30600	252300	-105700
1991/1992	-121200	-36500	-129700	-59300
1992/1993	-23500	-45300	-59100	26800
1993/1994	-81300	-56700	-24000	69600
1994/1995	-1900	-69500	44100	152800
SUBTOTAL	-314900	-238600	83600	84200
1995/1996	-123900	-241200	77100	-92000
1996/1997	-161400	-273500	10800	-51000
1997/1998	-11300	-304300	90000	45700
1998/1999	-66300	-340500	121300	84000
1999/2000	69800	-373300	198900	178500
SUBTOTAL	-293100	-1532800	498100	165200
2000/2001	-74600	-445600	228500	-295400
2001/2002	-96900	-490300	254800	-263300
2002/2003	221600	-516100	363100	-133500
2003/2004	187800	-563600	388000	-100900
2004/2005	486500	-610000	493700	28100
SUBTOTAL	724400	-2625600	1728100	-765000

Source: McDonald & Associates

Road Fund. The County Road Fund for Las Positas would show a surplus during the first phase of development. The subsequent phases would not produce revenues adequate to cover road maintenance costs. These deficits would be caused by two factors. First, fuel tax revenues (the principal revenues in the road fund) are based upon statutory formulae that do not respond to inflation. Hence, the actual purchasing power of fuel tax revenue would decline in proportion to general price inflation. Second, the roads in Las Positas would require more maintenance as they age.

This problem is not unique to Las Positas. Without a revenue increase, county road funds throughout California would experience major deficits by the turn of the century. (Many counties are currently augmenting road fund deficits with general revenues or are deferring road maintenance.) State legislation that raises new revenues for roads may be passed during the proposed Las Positas buildout period.

Library Fund. The library fund would show a positive fund balance from Las Positas for each year of project buildout except for the first year when a small deficit is indicated and for three years in Phase II. The overall positive fund balance could be used to improve and maintain County-wide services or assist in the financing of other fund's deficits. This would occur through Augmentation Fund appropriations.

Structural Fire Fund. The Structural Fire Fund would show negative fund balances from development in Las Positas. (See further discussion on proposed use of Fire Fund, above, for an important note on this issue.) Negative cashflows are indicated for 12 years of the buildout period, with cumulative deficits shown for each phase. This impact is partially the result of the assumption that the Structural Fire Fund would receive property tax revenues equal only to its tax apportionment factor share. In fact, the fund has received additional revenues from the Augmentation Fund. If Augmentation Fund transfers continue at current rates for the new service the impact of Las Positas would be reduced substantially or eliminated. However, as stated earlier, there is no assurance that such a transfer would occur.

b. Vulnerability

The projections of Alameda County costs and revenues for Las Positas are vulnerable to several potential events which could substantially increase costs and/or lower revenues. The key vulnerability is in the County's General Fund, which finances the County's health and social welfare programs. The General Fund is presently heavily dependent upon state subventions and state and federal grants from these services. Major reductions in these subventions and grants are currently being considered by the State Legislature. The federal government has already reduced or eliminated major grant programs and is likely to effect further reductions. Costs for services in Las Positas may also be higher than previously estimated.

The following analysis is an attempt to approximate a "worst case" scenario, with higher costs and lower revenues. The definition of the "worst case" was developed primarily by Alameda County staff. It is unlikely that a worst case would ever occur because if such conditions were imposed, the County would most probably adjust County-wide service standards, eliminate services, etc.

Table 5.53 shows the "worst case" revenue projections for Las Positas. The projection was based upon the following revised revenue assumption:

- It was assumed that motor vehicle license fee collected in-lieu of personal property tax revenue would remain at its 1981/82 level through project buildout. Despite annual increases in County population, total revenue would not increase. That is, no additional motor vehicle in-lieu tax revenue would be realized from development of Las Positas.

Table 5.54 shows the "worst case" General Fund cost projections and fund balance for Las Positas. The cost projection is based upon the following revised assumptions:

- First, it was assumed that general government costs would include a County-wide per capita cost of $11.35 for contingencies. (This is the amount that Alameda County currently budgets for contingencies.) In addition, it was assumed that federal revenue sharing funds would be eliminated without any compensatory cutback in funded services. These two assumptions have the effect of increasing general government per capita costs from $142.15 to $160.66.

- Second, it was assumed that net health cost would be equivalent to the County-wide per capita cost rather than a comparable area estimate (or approximately 50% of County-wide per capita). This assumption results in an increase in health net cost from $25.00 to $48.95 per capita.

- Third, it was assumed that social services net cost would equal the County-wide per capita cost rather than a per capita cost adjusted by a comparable area factor. This assumption results in an increase of social services net cost from $5.61 to $21.17 per capita.

Table 5.55 summarizes the vulnerability analysis. Under the "worst case" scenario, the County-administered funds would show cumulative fund balance deficits during buildout of Las Positas and thereafter. Once again, it must be noted that such deficits are highly unlikely because adjustments would be made to reduce costs or increase revenues.

C. Financial Burden

The financial burden of the services provided by Alameda County are summarized on Table 5.56.

TABLE 5.53
ALAMEDA COUNTY GENERAL FUND VULNERABILITY ANALYSIS: REVENUE
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	Property Tax	Property Transfer Tax	Sales Tax	Fines & Forfeits	Other General Revenue	Cig-arette Tax	Vehicle In-Lieu Tax (1)	TOTAL REVENUE
1985/1986	36400	89600	32600	10100	57700	2900	31100	260400
1986/1987	393400	143400	65200	20200	115300	5400	61200	804100
1987/1988	955300	107700	97800	30400	173000	7600	90500	1462300
1988/1989	1299800	161400	130400	40500	230600	9400	118800	1990900
1989/1990	1827900	125400	163000	50600	288300	11000	146300	2612500
SUBTOTAL	4512800	627500	489000	151800	864900	36300	447900	7130200
1990/1991	2142000	129100	195100	60600	345100	12300	172700	3056900
1991/1992	2430500	196700	227400	70700	402200	13400	198300	3539200
1992/1993	2966700	147900	259500	80600	459000	14400	223000	4151100
1993/1994	3232200	215600	291800	90700	516000	15000	247000	4608300
1994/1995	3750300	166900	323900	100700	572900	15600	270300	5200600
SUBTOTAL	14521700	856200	1297700	403300	2295200	70700	1111300	20556100
1995/1996	4000600	176300	355400	110400	628600	16000	291900	5579200
1996/1997	4255800	266100	386900	120200	684300	16300	313100	6042700
1997/1998	4857300	196600	418400	130000	739900	16400	333800	6692400
1998/1999	5095700	286500	449900	139900	795700	16500	353500	7137700
1999/2000	5683200	216700	481400	149600	851300	16500	372700	7771400
SUBTOTAL	23892600	1142200	2092000	650100	3699800	81700	1665000	33223400
2000/2001	5907800	222200	512200	159100	905800	16400	390700	8114200
2001/2002	6107900	373900	542900	168700	960200	16200	408000	8577800
2002/2003	6929700	244800	573800	178300	1014700	16100	424600	9382000
2003/2004	7118600	396700	604600	187900	1069200	15800	440900	9833700
2004/2005	7921100	267500	635400	197400	1123700	15500	456600	10617200
SUBTOTAL	33985100	1505100	2868900	891400	5073600	80000	2120800	46524900

NOTE:
(1) Motor vehicle in-lieu tax revenue based on zero (0) increase in revenue above 1981/1982 level through project buildout.
(Please see text for complete explanation)

Source: McDonald & Associates

TABLE 5.54
ALAMEDA COUNTY GENERAL FUND VULNERABILITY ANALYSIS: COSTS AND BALANCE
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	COSTS General Govt. (1)	Health Net Cost (2)	Soc. Serv. Net Cost (3)	Sheriff Patrol	TOTAL COSTS	TOTAL REVENUE	BALANCE ANNUAL	BALANCE CUMULATIVE
1985/1986	374200	114000	49300	126600	664100	260400	-403700	-403700
1986/1987	747900	227900	98500	253000	1327300	804100	-523200	-926900
1987/1988	1122500	342000	147900	379800	1992200	1462300	-529900	-1456800
1988/1989	1496200	455900	197200	506200	2655500	1990900	-664600	-2121400
1989/1990	1870400	569900	246500	632800	3319600	2612500	-707100	-2828500
SUBTOTAL	5611200	1709700	739400	1898400	9958700	7130200	-2828500	
1990/1991	2239400	682300	295100	757700	3974500	3056900	-917600	-3746100
1991/1992	2609600	795100	343900	882900	4631500	3539200	-1092300	-4838400
1992/1993	2978300	907400	392400	1007700	5285800	4151100	-1134700	-5973100
1993/1994	3348500	1020200	441200	1132900	5942800	4608300	-1334500	-7307600
1994/1995	3717500	1132700	489900	1257700	6597800	5200600	-1397200	-8704800
SUBTOTAL	14893300	4537700	1962500	5038900	26432400	20556100	-5876300	
1995/1996	4078500	1242600	537400	1379900	7238400	5579200	-1659200	-10364000
1996/1997	4440200	1352800	585100	1502200	7880300	6042700	-1837600	-12201600
1997/1998	4801200	1462800	632600	1624400	8521000	6692400	-1828600	-14030200
1998/1999	5163300	1573200	680400	1746900	9163800	7137700	-2026100	-16056300
1999/2000	5524000	1683000	727900	1868900	9803800	7771400	-2032400	-18088700
SUBTOTAL	24007200	7314400	3163400	8122300	42607300	33223400	-9383900	
2000/2001	5877600	1790800	774500	1988600	10431500	8114200	-2317300	-20406000
2001/2002	6230700	1898400	821000	2108000	11058100	8577800	-2480300	-22886300
2002/2003	6584300	2006100	867600	2227700	11685700	9382000	-2303700	-25190000
2003/2004	6938000	2113900	914200	2347300	12313400	9833700	-2479700	-27669700
2004/2005	7291600	2221600	960800	2467000	12941000	10617200	-2323800	-29993500
SUBTOTAL	32922200	10030800	4338100	11138600	58429700	46524900	-11904800	

NOTES:
(1): General government costs include a County-wide per capita cost of $11.35 for Contingency, and a complete loss of revenue sharing funds without a compensatory cutback in funded services.
(2): Health net cost assumes a per capita cost equal to the County-wide per capita, rather than 50% of County-wide per capita (which is a comparable area estimate).
(3): Social services net cost assumes a per capita cost equal to the County-wide per capita, rather than a per capita cost adjusted with comparable area factors.
(Please see text for complete explanation)

Source: McDonald & Associates

TABLE 5.55
VULNERABILITY ANALYSIS:
SUMMARY OF ANNUAL FUND BALANCES- ALL FUNDS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

	FUND BALANCES			
YEAR	GENERAL FUND (1)	ROAD FUND	LIBRARY FUND	FIRE FUND
1985/1986	-403700	20700	-25200	-444100
1986/1987	-523200	51900	21900	-386700
1987/1988	-529900	72100	95800	-296400
1988/1989	-664600	91400	141300	-241100
1989/1990	-707100	102500	210900	-156200
SUBTOTAL	-2828500	338600	444700	-1524500
1990/1991	-917600	-30600	252300	-105700
1991/1992	-1092300	-36500	-129700	-59300
1992/1993	-1134700	-45300	-59100	26800
1993/1994	-1334500	-56700	-24000	69600
1994/1995	-1397200	-69500	44100	152800
SUBTOTAL	-5876300	-238600	83600	84200
1995/1996	-1659200	-241200	77100	-92000
1996/1997	-1837600	-273500	10800	-51000
1997/1998	-1828600	-304300	90000	45700
1998/1999	-2026100	-340500	121300	84000
1999/2000	-2032400	-373300	198900	178500
SUBTOTAL	-9383900	-1532800	498100	165200
2000/2001	-2317300	-445600	228500	-295400
2001/2002	-2480300	-490300	254800	-263300
2002/2003	-2303700	-516100	363100	-133500
2003/2004	-2479700	-563600	388000	-100900
2004/2005	-2323800	-610000	493700	28100
SUBTOTAL	-11904800	-2625600	1728100	-765000

NOTE:
(1): For assumptions, please see text and Tables 5.53 and 5.54.

Source: McDonald & Associates

TABLE 5.56
FISCAL IMPACT SUMMARY, ALAMEDA COUNTY GOVERNMENT
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION

	IMPACT GROUPS				
IMPACT CATEGORY	EXISTING LANDOWNERS	PROJECT DEVELOPERS/ BUILDERS	FUTURE RESIDENTS AND BUSINESSES	PUBLIC AGENCIES	RESIDENTS OF ALAMEDA COUNTY
GENERAL FUND	Continued Financial Support Through Property Taxes	None	Financial Support Through Increased Tax Revenue From Existing Sources	None	General Fund Costs in Excess of Revenues Would Result in Reduced Services to County Residents
ROAD FUND	Continued Financial Support Through Fuel Purchases and Fines and Forfeitures	See Public Land Acquisition Fund and Capital Improvement Fund (Tables 5.41 and 5.42)	Road Fund Deficits Would Require the Levy of a Road Maintenance Within the CSA	Increased Maintenance Costs for Roads in Livermore and Other Portions of the County are Not Financed	Increased Wear and Tear on County Roads That is Not Offset By New Revenues Will Reduce Service Standards
LIBRARY FUND	Same as General Fund	Same as Above	Same as General Fund	Unmet Service Demands, Particularly in First Two Phases Would Fall Upon the City of Livermore's Library System	Library Fund Surplus Could Be Used to Upgrade County-wide Service or to Raise Service Standard in Proposed Las Positas Development
STRUCTURAL FIRE FUND	Same as General Fund	Same as Above	Structural Fire Fund Deficits Would Require Imposition of Special Tax or User Fees in Proposed Las Positas Development	None	If Operating Deficits are Not Mitigated Funds from County-wide Sources Would be Required, Lowering Service Standards in Other Areas

Source: McDonald & Associates

Burden on existing landowners would be minimal and would generally vary in proportion to services rendered. If the Sponsor's Advance revenue were to be used for offsetting operating deficits in County funds there would be a direct financial burden upon the Sponsor.

Project developers/builders financial burden would generally vary in proportion to services received. Primary burden would be from the development fees discussed previously.

The bulk of revenue for the Alameda County funds would be derived from taxes paid by the future residents and businesses in Las Positas. Because of the possibility of deficits between the existing taxes and projected costs, additional special taxes, user fees, benefit assessments or other revenue sources may be required from Las Positas. This additional burden should be equitable since the residents and businesses in Las Positas would be the primary beneficiaries of the additional public services provided.

Other Public agencies would also be affected by the Proposed Project. These impacts are discussed in the subsequent section.

No burden upon residents of Alameda County would occur if all potential fund balance deficits were mitigated. If, however, fund balance deficits did occur general County revenues could be required. This would reduce funds available for County-wide services.

d. The Post-Buildout Situation

Following buildout of Las Positas, the impact on County funds would depend entirely upon the mitigation of potential fund balance deficits. The positive fund balances should stabilize following buildout. However, property tax revenues, which would increase steadily throughout buildout, would cease growing in constant dollar terms. Other revenue sources would generally keep pace with inflation. It is likely that Social Service and Health Service costs would increase as the housing stock in Las Positas ages. This could result in County costs in excess of revenues leading to reductions in service.

The Road Fund, unless mitigated, would continue showing substantial deficits. This situation would worsen as roads in Las Positas require major maintenance or reconstruction.

The Library Fund should continue generating surplus revenue from Las Positas following buildout. However, because the Library Fund revenue is largely derived from property taxes, the annual surplus should stabilize or possibly decline slightly over time.

2. Mitigation Measures

The impacts on the funds administered by Alameda County include overall fund deficits from Las Positas. The following mitigation measures are suggested:

General Fund. A straightforward way to eliminate the estimated General Fund deficit would be to finance all or part of the Sheriff's services with a special tax levied at Las Positas. A Community Facilities District could be used as the governmental mechanism for imposing such a tax. The Mello-Roos Community Facilities Act specifically cites police protection as an ongoing operating cost that can be financed with a special tax, after two-thirds approval by the voters is obtained. On the basis of the planned level of service for Las Positas, the police protection special tax would be approximately $140 per household per year.

Another approach would be to include more industrial and/or commercial land in the Las Positas land use plan, if the market would support such uses. A variant of this approach is to demonstrate that related off-site land uses (e.g., land uses where Las Positas residents would work or shop) would produce off-setting revenues to the Alameda County General Fund.

Structural Fire Fund. A Community Facilities District could also impose a special tax for fire protection as well as police protection. This new revenue source, after two-thirds approval by the voters could provide all or part of the costs for establishing a local fire protection department. The newly-created fire department would have no connection to the County's existing Structural Fire Fund, and would not exhibit the deficits shown in the Structural Fire Fund. This mitigation measure would also deal with the concern that the Structural Fire Fund was not originally intended to finance an urban level of fire protection service. On the basis of the planned level of service at Las Positas, the fire protection special tax would be approximately $75 per household per year.

Road Fund. Road Fund deficits in Las Positas would be only a part of an overall pattern County-wide. During the buildout period, the County Road Fund as a whole would require additional revenues. General Fund transfers would be required to avert substantial reduction in County road maintenance. This impact within Las Positas could be mitigated by imposition of Road Maintenance Benefit Assessments. This assessment could be combined with the benefit assessment that is recommended for maintaining street lights.

In summary, implementation of benefit assessments and special taxes under a Community Facilities District would eliminate impacts on Alameda County.

PUBLIC SERVICE AGENCIES OTHER THAN ALAMEDA COUNTY

In addition to Alameda County and the proposed CSA, the Las Positas area would be directly served by three existing agencies: the Livermore Valley Unified School District (LVUSD), the Livermore Area Recreation and Park District (LARPD) and the Alameda County Flood Control and Water Conservation District, (Zone 7). Las Positas could also affect services provided by the adjacent City of Livermore. The following describes these services, discusses the fund balance

impacts, vulnerability, burden analysis and the post buildout situation for these agencies.

1. Impacts

a. Fund Balance

Livermore Valley Unified School District--(LVUSD)

Operating costs for the LVUSD are limited by two recent events: The passage of Proposition 13 and the Serrano v. Priest decision on equalizing school financing. Proposition 13 limited property tax revenue available to school districts, forcing schools to depend more heavily upon direct state aid. Serrano v. Priest requires equalized funding of schools on a per-student basis. At present, the average limit within the LVUSD is $1,814 per student per year.

Ongoing revenues for schools are generated from the allocation to the LVUSD of 23.97 percent of the one percent of taxable valuation property tax. These revenues are supplemented with state aid. However, total revenues for school system operations are limited to $1,814 per student by the Serrano v. Priest decision on school funding. Operating revenues for the school system in Las Positas are assumed to equal this amount. It is expected that school operating costs would continue to be supplemented as necessary from the State of California General Revenues, resulting in no impact from development of Las Positas. The key impact of Las Positas upon the LVUSD relates to the demand for new schools. This impact is discussed in the Capital Costs and Financing section of this chapter.

Livermore Area Recreation and Park District--(LARPD)

Annual operating costs for the LARPD are shown on Table 5.57. The estimated unit cost of $5,900 per acre per year is equal to the District's current cost for maintaining its parks. Use of this estimate also assumes that the cost of water used in maintenance would be similar to the District's current water costs. However, treated water would be purchased from the Las Positas CSA.

Ongoing revenues to the LARPD would derive from two sources: user fees and property taxes. Current user fees are estimated by the District to average $1.00 per capita per year. This figure was used for the projection. In Tax Code Area 64001, the property tax allocation to LARPD is 13.28 percent of property tax revenue. A portion of LARPD's property tax allocation is subject to appropriation to Alameda County's Special District Augmentation Fund. Because of the uncertainty concerning the amounts of future Augmentation Fund allocations, the effects of the Augmentation Fund on the District were not estimated, and it was assumed that LARPD would receive its entire 13.28 percent allocation.

TABLE 5.57
LIVERMORE AREA RECREATION AND PARK DISTRICT ANALYSIS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	OPERATING COSTS	REVENUES			BALANCE	
		PROPERTY TAX	USER CHARGES	TOTAL REVENUE	ANNUAL	CUMULATIVE
1985/1986	59,000	11,500	2,300	13,800	-45,200	-45,200
1986/1987	118,000	124,000	4,700	128,700	10,700	-34,500
1987/1988	177,000	301,200	7,000	308,200	131,200	96,700
1988/1989	236,000	409,900	9,300	419,200	183,200	279,900
1989/1990	295,000	576,300	11,600	587,900	292,900	572,800
SUBTOTAL	885,000	1,422,900	34,900	1,457,800	572,800	
1990/1991	354,000	705,300	14,000	719,300	365,300	938,100
1991/1992	413,000	766,300	16,300	782,600	369,600	1,307,700
1992/1993	472,000	935,400	18,600	954,000	482,000	1,789,700
1993/1994	531,000	1,019,300	20,900	1,040,200	509,200	2,298,900
1994/1995	531,000	1,182,400	23,200	1,205,600	674,600	2,973,500
SUBTOTAL	2,301,000	4,608,700	93,000	4,701,700	2,400,700	
1995/1996	590,000	1,261,300	25,400	1,286,700	696,700	3,670,200
1996/1997	649,000	1,341,800	27,700	1,369,500	720,500	4,390,700
1997/1998	708,000	1,531,400	29,900	1,561,300	853,300	5,244,100
1998/1999	767,000	1,606,600	32,200	1,638,800	871,800	6,115,900
1999/2000	826,000	1,791,900	34,400	1,826,300	1,000,300	7,116,200
SUBTOTAL	3,540,000	7,533,000	149,700	7,682,700	4,142,700	
2000/2001	885,000	1,862,700	36,600	1,899,300	1,014,300	8,130,500
2001/2002	944,000	1,925,880	38,800	1,964,600	1,020,600	9,151,200
2002/2003	1,003,000	2,184,900	41,000	2,225,900	1,222,900	10,374,100
2003/2004	1,062,000	2,244,400	43,200	2,287,600	1,225,600	11,599,800
2004/2005	1,062,000	2,497,400	45,400	2,542,800	1,480,800	13,080,600
SUBTOTAL	5,253,000	10,715,200	205,200	10,920,400	5,964,400	

Source: McDonald & Associates

Table 5.57 indicates that park maintenance costs generated by Las Positas exceed revenues during the first phase of the project, producing fund balance deficits. Subsequent phases are shown to produce positive cashflows.

Insofar as recreation demand would not be entirely met on site, the adjoining recreation district, the East Bay Regional Parks District (EBRPD), could receive additional use. Since the District would receive no tax revenue from Las Positas, it may be negatively affected. The costs of this additional service would be borne by the residents inside the EBRPD, either through reduced services or higher costs.

Alameda County Flood Control and Water Conservation District, Zone 7

Zone 7 would provide Las Positas with flood control services and wholesale water. Annual costs of flood control maintenance on channel improvements in Las Positas have been estimated to reach $136,500 in 2004/05 assuming 39,000 linear feet of channel and an annual maintenance cost of $3.50 per foot. These costs and property tax revenues from the project allocated to Zone 7 are shown in Table 5.58. Major flood control improvements are assumed to be in place during the first phase of the project, and maintenance costs are assumed to be constant over time. Flood control maintenance costs exceed revenues until the sixth year of the project. Revenues exceed costs after the sixth year by increasing amounts as total taxable value increases.

Zone 7 would provide wholesale water to the project. Operating revenues for water are financed from sales to the CSA. The cost of water to be provided by Zone 7 has not been estimated, but water rates set by the CSA are presumed to be set equal to costs.

Unless a new District-wide revenue source for water supply and flood control improvements is developed, deficits may result from Las Positas during the first two phases of development. This impact could be mitigated by Zone 7 imposing an annual benefit assessment. Another approach would be for the proposed Las Positas CSA to impose a flood control benefit assessment, and transfer the new revenue to Zone 7.

City of Livermore

The City of Livermore would be affected by the development of Las Positas in several ways. Las Positas residents would undoubtedly depend upon commercial services available in Livermore, particularly during the early phases of the project. This would add substantially to Livermore's sales tax revenues. Public services provided by Livermore may also be affected. The two areas presently identified are transit service and libraries.

TABLE 5.58
ALAMEDA COUNTY WATER CONSERVATION AND
FLOOD CONTROL DISTRICT ZONE 7
ONGOING COST/REVENUE ANALYSIS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	OPERATING COSTS	PROPERTY TAX REVENUE	BALANCE ANNUAL	BALANCE CUMULATIVE
1985/1986	6800	2200	-4600	-4600
1986/1987	13700	23700	10000	5400
1987/1988	20500	57600	37100	42500
1988/1989	27300	78400	51100	93600
1989/1990	34100	110200	76100	169700
SUBTOTAL	102400	272100	169700	
1990/1991	41000	129200	88200	257900
1991/1992	47800	146600	98800	356700
1992/1993	54600	178900	124300	481000
1993/1994	61400	195000	133600	614600
1994/1995	68300	226200	157900	772500
SUBTOTAL	273100	875900	602800	
1995/1996	75100	241300	166200	938700
1996/1997	81900	256600	174700	1113400
1997/1998	88700	292900	204200	1317600
1998/1999	95600	307300	211700	1529300
1999/2000	102400	342700	240300	1769600
SUBTOTAL	443700	1440800	997100	
2000/2001	109200	356200	247000	2016600
2001/2002	116000	368300	252300	2268900
2002/2003	122900	417900	295000	2563900
2003/2004	129700	429300	299600	2863500
2004/2005	136500	477700	341200	3204700
SUBTOTAL	614300	2049400	1435100	

Source: McDonald & Associates

Transit service to Las Positas could be provided by a contract with the City of Livermore Transit System, RIDEO. The service contract would be financed by a combination of Local Transportation Fund revenues, State Transit Assistance, and fares. Local Transportation Fund revenues and State Transit Assistance are derived from State sales taxes and would be allocated to the Las Positas CSA (or whatever form of government evolves) based upon a statutory formula which takes into account the area's retail sales. It is assumed that these revenue sources would provide adequate revenue to finance transit service for Las Positas.

The Las Positas project area would not be served by an on-site library until 1990/91. Prior to 1990/91, it is assumed that the County Bookmobile, the Dublin branch of the County Public Library, and the Livermore Public Library would provide library service to Las Positas residents. The Las Positas project area could significantly affect the Livermore Public Library. The Livermore library is located 3-5 miles from the project site, while the Dublin branch library, the next closest library, is located over 10 miles from the project site. Library demands unmet by County Library Bookmobile services would fall predominately upon Livermore's library.

The Livermore Public Library currently serves a population of 50,000 within the area of Livermore's Sphere of Influence. Three hundred thousand volumes are circulated annually from its total collection of 79,000 volumes. Book storage is at capacity. The following analysis assumes that the Livermore Public Library would provide library services to Las Positas at the same level of service provided to its existing service area.

The increases in Livermore Public Library service area population would burden Livermore with incremental costs of providing services and expanding the volume collection (maintaining the existing 1.6 volume to population ratio). The following estimates of current usage patterns and corresponding costs were used:

- Circulation of 6.0 volumes per capita at a cost of 50 cents per circulation, and

- 0.6 reference inquiries per capita at a cost of $2.05 per inquiry.

The ongoing costs of circulation and inquiry service area $4.25 per capita per year, plus $27,000 ($13,500 each) for annual salaries of two new technical service staff. Acquisition and processing of 1.6 volumes per added population would impose a one-time cost of $16.35 per added population. A $100,000 expansion to accommodate 40,000 new volumes has been included as volume storage. These costs, shown in Table 5.59, were derived from the following assumptions:

- volume purchasing ($20.00/volume)
- volume cataloguing ($3.66/volume)
- volume storage ($2.50/volume)

TABLE 5.59
COST IMPACT ANALYSIS: CITY OF LIVERMORE PUBLIC LIBRARY
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION
(All figures are in constant February 1982 dollars)

YEAR	CUMULATIVE POPULATION	PER CAPITA COST @ $4.25	POPULATION ADDED	ONE-TIME COST @ $16.35	TOTAL COSTS
1985/1986	2329	9898	2329	38079	48000
1986/1987	4655	19784	2326	38030	57800
1987/1988	6987	29695	2332	38128	67800
1988/1989	9313	39580	2326	38030	77600
1989/1990	11642	49479	2329	38079	87600
SUBTOTAL					338800
1990/1991	13939	59241	2297	37556	96800
1991/1992	(1)				
1992/1993					
1993/1994					
1994/1995					
SUBTOTAL					96800

NOTE:
(1): In 1991/1992, a permanent library facility would go into service on the Las Positas project site. Cost impacts on the City of Livermore Public Library would consequently be substantially reduced. (Please see text for complete explanation).

Source: McDonald & Associates

Revenues offsetting these costs are minimal. Livermore is not entitled to a share of the property tax from Las Positas. The State, under the Library Services Act, would provide a subvention to the City of Livermore of approximately 46 cents per library transaction for Las Positas residents. This subvention is available to any public library that serves non-area residents. To maintain its public library status, Livermore would not be able to refuse service to Las Positas residents. Senate Bill 358 (1982 Library Relief Bill) may provide additional State subventions.

Following the construction of a library within Las Positas, planned for 1991, the impact of the Project upon the City of Livermore's Library System would be substantially reduced.

b. Vulnerability

The vulnerability of the other agencies providing Las Positas public services to possible changes in development timing or characteristics are generally minimal.

The LVUSD would continue to receive operating and maintenance revenues from the State of California in proportion to students in the District.

LARPD would encounter costs in proportion to growth of its principal revenue sources (property tax and user fees) limiting its vulnerability.

Zone 7 would also encounter costs in proportion to growth of its principal revenue source (property tax) limiting its vulnerability.

c. Financial Burden

Table 5.60 summarizes the estimated burden impacts of the other agencies providing services to Las Positas. The distribution of burden appears equitable with the sole exception of the Livermore Public Library. Impacts of the capital financing for these agencies has been discussed previously in the fiscal analysis.

d. The Post-Buildout Situation

Following buildout, costs and revenues for other agency operation and maintenance would stabilize. No aspect of the present analysis suggests future fiscal impacts on these agencies that are not subject to mitigation.

2. Mitigation Measures

The impacts identified for the other agencies providing services to Las Positas were the possibility of small fund balance deficits for the LARPD and Zone 7 during Phase I of project buildout, and the impact upon the Livermore Library. These impacts could be mitigated by the following actions.

TABLE 5.60
FISCAL IMPACT SUMMARY, OTHER AGENCIES SERVING LAS POSITAS
LAS POSITAS GENERAL PLAN AMENDMENT CONSIDERATION

	IMPACT GROUPS				
IMPACT CATEGORY	EXISTING LANDOWNERS	PROJECT DEVELOPERS/ BUILDERS	FUTURE RESIDENTS AND BUSINESSES	PUBLIC AGENCIES	RESIDENTS OF ALAMEDA COUNTY
LIVERMORE VALLEY UNIFIED SCHOOL DISTRICT	See Public Land Acquisition Fund (Table 5.41); Continued Financial Support Through Property Taxes	See Capital Improvement Fund (Table 5.42)	Residents and Businesses will Ultimately Pay all Costs, Either Through Prices, Local Taxes and State Taxes	None	None
LIVERMORE VALLEY RECREATION AND PARK DISTRICT	Same as Above	Same as Above	Residents and Businesses Will Ultimately Pay All Costs Through Prices, Property Taxes, or User Fees	Unmet Service Needs Will be Met by the Adjoining East Bay Regional Parks District	None
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, ZONE 7	Continued Financial Support Through Property Taxes	Developers Must Provide Easements and Construct Flood Channels and Other Improvements or Pay In-Lieu Fees	Same as Above	None	None

Source: McDonald & Associates

Livermore Area Recreation and Parks District

Initial fund balance deficits shown in the first two years could be offset by a fund transfer from the Las Positas CSA operating contingency fund previously recommended. Another approach would be to reduce or eliminate the charges made by the CSA to LARPD for wastewater (for irrigating park lands). This mitigation would lower park maintenance costs, but, the lost revenue to the CSA could require increases in its sewer charges.

Alameda County Flood Control and Water Conservation District, Zone 7

The small fund balance deficit shown for the first year of Phase I could be offset by a transfer from the Las Positas CSA operating contingency fund.

City of Livermore Library

There is no standard fiscal mechanism for mitigating the impact of Las Positas upon the City of Livermore's Library through financial support from Las Positas to the City of Livermore. It would be possible to eliminate some or all of the City's problem by building the County Library in Las Positas in Phase I. This would increase the early-year deficits for the County Library Fund but the cumulative balance would still be positive. The City of Livermore would receive increased revenues (sales tax) due to Las Positas that could be considered as offsetting the increased service costs.

5.9 VISUAL AND AESTHETIC CONDITIONS

Setting

The proposed Las Positas site has a very scenic rural quality. Grass-covered rolling hills and ridges form a dramatic backdrop for the gently sloping valley. Above the hills to the north towers the distinctive landmark of Mt. Diablo. In the valley, farm houses are scattered on fields of hay and cultivated crops. Barns near the houses support herds of cattle that roam the hills and some of the valley. Next to the buildings are trees and other vegetation planted by the owners.

Several two-lane roads criss-cross the valley in north/south and east/west directions. The May School Theatre, a former school building is located on May School Road. In the middle of the valley are long lines of closely spaced telephone poles supporting the wires of the Federal Communications Monitoring Station.

Little of the Las Positas Valley is visible from I-580. The southern portion of the valley is bounded by 500 - 600 foot hills, providing a buffer from the freeway and the City of Livermore. There are, however, one or two breaks on the hills providing a quick view into the valley for the passing motorist.

Impacts

The existing visual conditions would be altered by eliminating agricultural open space uses and farm buildings, and replacing them with residential, commercial, and industrial buildings. Although detailed plans have not yet been developed, it is expected that no buildings will exceed 4 - 5 stories in height and most development is indicated for areas with less than 15% slope. Buildings would not be so horizontally prominent to detract from views of distant hills. Other vistas could be preserved by the many open space corridors provided in the Plan.

Some potential adverse impact could result from the proximity of the industrial area to the Springtown residential area. The final characteristics of this industrial area are undetermined at this stage in planning, but a contemporary light industrial park design would not necessarily be an adverse impact.

As described in the project description, the approximate boundaries of the Las Positas site are: the County line between Alameda and Contra Costa Counties to the north; the foothills near Interstate 580 to the south; ridgelines and the Livermore City limits to the east; and the ridgelines to the west. In view of these natural boundaries, the proposed site provides a visual sense of urban containment and physical definition.

Mitigation Measures

Visual impacts resulting from a change in land uses within the project area from agricultural to urban are unavoidable. The following would therefore serve to ensure a visually attractive urban development and to provide for protection of significant topographic and vegetation features within and adjoining the project:

- Incorporate an urban design element as a part of the current General Plan amendment and/or rezoning process establishing guidelines and standards for the design and siting of public and private improvements and for the landscaping of public and private areas.

- Utilize the design review process throughout the Plan amendment and rezoning process to ensure consistency of public and private projects with the urban design element.

- Establish specific design criteria and requirements for visually significant areas and features, to include: hill areas within and surrounding the project; waterways; major stands of trees; community and neighborhood entryways; neighborhood and community public facilities and shopping areas and centers. Areas adjoining, or visible from designated State and County scenic routes or from existing or planned regional parklands;

- Establish specific design criteria, standards and requirements for development proposed in hill areas in order to preserve the existing character of the topography, minimize the need for extensive grading to accommodate streets and structures, etc.

- Establish criteria, standards and requirements to regulate construction activities through the build-out period of the project in order to minimize visual, acoustical disturbance to developed areas.

5.10 ACOUSTICAL CONDITIONS

Setting

This section deals with existing acoustical conditions for the Las Positas project area and adjacent environs. The discussion focuses on the principal noise sources and the relationship of each noise source to the appropriate noise standard.

Two common methods for describing noise levels are L_{10} and CNEL. The L_{10} measurement reflects the level of sound which is exceeded 10 percent of the time. This results in a noise level reflecting nearly the peak sound level during the test period. A CNEL, Community Noise Equivalent Level, is an averaging of noise levels during a 24-hour time period. Weighting factors are included which place greater importance on noise events occurring during the evening hours (7:00 p.m. to 10:00 p.m.) and night hours (10:00 p.m. to 7:00 a.m.).

Noise Sources and Existing Levels

The principal noise generators in proximity to Las Positas are traffic on I-580 and aircraft operation at Livermore Municipal Airport. Noise contours mapped by California Department of Transportation (Caltrans) in 1975 show a 65 L_{10} noise contour extending approximately 1,000 feet north and south of I-580. Noise contours for the Livermore Municipal Airport were mapped in 1975. The 65 CNEL noise contour is limited to an area within 1,000 feet of the airport runway. The airport approach and departure paths are outside the Las Positas site. The proposed Las Positas development also lies outside the Airport Land Use Commission's (ALUC) adopted safety and noise zones for Livermore Municipal Airport[2].

Noise Standards

Alameda County's noise element of the General Plan[2] depicts a simplified land use standard for interpretations of CNEL noise levels to various land use categories. The noise levels for each land use category were selected in the ABAG-sponsored Regional Airport Systems Study and converted from the NEF system to CNEL.

In comparing existing noise levels with the adopted noise standards, there are presently no noise impacts on the Las Postas site.

[1]ALUC staff, Airport Land Use Commission of Alameda County, Letter to Bill Allin, Alameda County Planning Department (February 19, 1982).

[2]Alameda County Planning Department, Noise Element General Plan, July 1975.

Impacts

Projected Noise Levels - 2005

Projected noise levels by the year 2005 will moderately change along the I-580 corridor, along major arterials, and around the Livermore Airport. The predicted noise levels will extend out further from both sides of I-580, creating a larger area experiencing noise levels of 65dB L_{10} or greater. At the closest point, I-580 is approximately 1,500 feet from the project boundary. This area between Las Positas and I-580 is a series of hills rising approximately 200 feet. These hills will effectively buffer Las Positas from noise generated along the freeway.

The Livermore Municipal Airport plans to expand aircraft capacity which will increase local noise levels[1]. However, the 1995 airport noise contours show the 60 CNEL noise level well outside the vicinity of Las Positas[1]. The closest 60 CNEL noise contour is approximately 4,000 feet from Las Positas. There will be occasional flyovers above Las Positas, yet the infrequent flyovers should not be expected to pose any continual noise problems. With the airport's landing pattern design in an east-west axis, approaches landing in a westerly direction will be south of I-580. Approaches landing in an easterly direction will fly closer to I-580 or over the city of Livermore rather than flying over Las Positas.

Construction in Las Positas would be an on-site noise generator. Because the project's construction will be phased, some short term CNEL noise impacts would affect adjacent residential land uses. Noise impacts would occur in residential areas within approximately 800 to 1000 feet of heavy construction machinery and grading operations. A noise volume of approximately 100 CNEL is expected at the noise source, decreasing to 60 CNEL at 800 to 1000 feet from the source.[2] A small portion of the Springtown development would be affected when construction of the eastern-most portion of the town center employment area occurs. This area is currently undeveloped, and extends approximately 3000 feet south along Springtown Boulevard from Hartford Avenue. Construction noise is not expected to impact local commercial and industrial land uses. The on-site industrial (research and development) land uses are not expected to generate noise levels that will impact adjacent commercial and residential land uses.

Traffic volumes would accumulate with each phase of development and would result in increasing noise levels along major off-site thoroughfares. Existing and proposed traffic volumes in surrounding communities combined with traffic volumes to be generated by Las Positas would yield increased noise levels on major off-site roads by the year 2005. Table 5.56 shows existing and proposed traffic volumes (ADT) on off-site thoroughfares along with the distance from each roadway of the 60 CNEL noise contour. The accumulative increase in traffic volumes, including La Positas, would push the 60 CNEL noise contours farther from each roadway. The projected noise contours allow for a 25 percent

[1] Master Plan - Livermore Municipal Airport, August W. Compton & Associates, December 1975.

[2] Conversation with John Woodward, Coffman Associates, St. Louis, MO, May 4, 1982.

TABLE 5.61
EXISTING AND PROJECTED OFF-SITE ROADWAY TRAFFIC VOLUMES AND 60 CNEL NOISE CONTOUR[a]

	Traffic Volumes 1980	60 CNEL[b] Dist. from Roadway (ft.)[c]	Traffic Volumes 2005[d]	60 CNEL Dist. from Roadway (ft.)[c]
Interstate 580				
o Vasco Road to State Route 84	46,000	375-500	85,500	625-750
o State Route 84 to Livermore Ave.	42,000	375-500	84,500	625-750
o Livermore Ave. to Portola Ave.	41,000	375-500	93,000	750-875
o Portola Ave. to Airway Blvd.	59,000	500-625	124,000	875-1,000
o Airway Blvd. to El Charro Rd.	63,000	500-625	136,500	875-1,000
Vasco Road				
o Dalton Rd. to Contra Costa County Line	4,000	10-125	8,000	125-250
o Dalton Rd. to I-580	6,000	10-125	37,500	375-500
o I-580 to W.P. tracks	8,000	125-250	22,000	250-375
Springtown Boulevard				
o Oleander to Bluebell Drive	4,000	10-125	39,000	375-500
o Bluebell Drive to I-580	8,000	125-250	49,000	375-500
State Route 84				
o I-580 to Portola Avenue	14,000	125-250	37,500	375-500
o Portola Avenue to Second St.	13,500	125-250	36,000	375-500
Livermore Avenue				
o Hartford Avenue to I-580	1,000	10-125	45,000	375-500
o I-580 to Portola Avenue	5,000	10-125	25,000	250-375
New Collier Canyon Road				
o I-580 to New Road "A"	4,000	10-125	33,500	375-500

[a]Distances do not take into consideration the natural topographic conditions. Distances are based on flat terrain.

[b]Source: City of Hayward, Conservation and Environmental Protection Study, 1975; Wilsey & Ham, 1982.

[c]Percentage of trucks equalling 2%, giving multiplying factor of .25 for additional noise distances.

[d]Projections include Las Positas traffic with TSM included (25% reduction in volumes generated by Las Positas)

reduction in traffic generated by Las Positas resulting from full implementation of Transportation System Management strategies. The projections are not adjusted for major facilities improvements, although the effect of these is not considered significant due to the mix with other traffic.

The increased traffic volumes and related noise levels would pose an unavoidable noise impact to those residential land uses on Livermore Avenue from I-580 to Portola Avenue; State Route 84 between I-580 and Second Street; Springtown Boulevard from Oleander to Bluebell Avenue to I-580; and New Collier Canyon Road from I-580 to New Road "A". Portola Elementary School, located on Portola Avenue, off Livermore Avenue, is designated as a noise sensitive area. Additional noise abatement techniques should be investigated to mitigate the project noise levels for this area[1].

Upon completion of Las Positas, there would be a potential for noise impacts along major on-site roadways. Table 5.57 shows daily traffic volumes at buildout, corresponding with 60 CNEL noise level distance for each roadway link (shown in Figure 5.15) based upon preliminary design[2]. As Table 5.57 illustrates, the greatest distance of the 60 CNEL noise level distance from Las Positas roadways is 500 feet. Most are less than 375 feet. As the Las Positas proposal is still at a very general planning stage, it is not possible to quantify the land uses within these affected corridors. As specific development plans are proposed, noise mitigation measures can be implemented (e.g., setbacks, berms, site design, etc.) where necessary.

Mitigation

Subsequent detailed acoustical analysis will need to be performed, especially near areas where residential land uses are adjacent to industrial and commercial land uses. Those industrial and commercial uses that characteristically have continuous heavy auto and truck traffic during day and evening hours would need close examination to minimize potential noise conflicts. The analysis should further investigate potential noise generators, impacts and probable mitigation measures to assure minimal noise conflicts.

Measures to mitigate construction noise impacts should include restrictions of construction activity to normal day-light working hours, weekdays only; proper muffling of machinery; and minimizing the amount of earth to be moved and the frequency it is moved.

Noise impacts internal to the project and resulting from projected traffic may be mitigated through regulations on site development and building design (e.g., required set-backs, noise barriers, orientation of uses, noise insulation, etc.). These measures could also be applied to new and to a more limited extent, existing development external to the project. This would be the responsibility of the cities within their incorporated limits. The sponsors of the proposed Las

[1]City of Livermore Planning Department, Noise Element of the General Plan, October, 1977.
[2]Facilities improvements proposed as mitigation for traffic impacts discussed in Section 5.7 would not significantly alter these contours.

Positas project, current and future landowners in the area, and future developers, residents, and businesses could also be required to fund necessary off-site improvements where these are determined to be necessary to mitigate noise impacts resulting directly from the proposed development. These could be undertaken as part of required off-site road improvements which are otherwise needed to mitigate project traffic impacts and which would be funded through development assessments and fees.

TABLE 5.62
60 CNEL NOISE CONTOUR FOR ON-SITE ROADWAY SYSTEM[a]

On-Site Roadway Links	Daily Traffic Volumes at Buildout	Distance from Roadway[b] to 60 CNEL Contour (ft.)[c]
1	45,000	375-500
2	40,000	375-500
3	35,000	375-500
4	30,000	250-375
5	25,000	250-375
6	20,000	250-375
7	25,000	250-375
8	30,000	250-375
9	25,000	250-375
10	25,000	250-375
11	30,000	250-375
12	30,000	250-375
13	10,000	125-250
14	15,000	125-250
15	10,000	125-250
16	20,000	250-375
17	20,000	250-375
18	15,000	125-250
19	15,000	125-250
20	25,000	250-375
21	20,000	250-375
22	15,000	125-250
23	15,000	125-250
24	10,000	125-250
25	5,000	10-125
26	15,000	125-250
27	15,000	125-250
28	10,000	125-250
29	10,000	125-250
30	5,000	10-125
31	20,000	250-375
32	3,000	10-125
33	3,000	10-125
34	10,000	125-250

[a]Distances do not take into consideration the natural topographic conditions. Distances are based on flat terrain.

[b]Source: City of Hayward, Conservation and Environmental Protection Study, 1975.

[c]Percentage of trucks equalling 2%, giving multiplying factor of .25 for additional noise distances.



ROADWAY LINKS

FIGURE 5.15

34 ROADWAY LINK NUMBER

5.11 ENERGY

Setting

Existing land use in the Las Positas Valley is primarily agricultural, consisting of rangeland and hay fields. Although agricultural energy consumption figures are highly variable depending upon local conditions, both rangeland and most field crops are energy efficient (the amount of energy consumed in production equals the energy value of the food products produced). Consequently, for purposes of this analysis, it is assumed that there are no existing energy outputs from the project site.

Impacts

The proposed Las Positas development would result in a large scale conversion of open space to energy intensive urban uses. Energy inputs would include those for site preparation, construction, operation of uses, and transportation. Shown in Table 5.63 are energy input requirements for each of these estimates for a twenty-year period. While these inputs should preferably be calculated for the lifetime of the project, historically, urban development energy input factors have varied dramatically. Consequently, in order to avoid obsolete projections, a twenty-year period has been chosen for the calculation of long term energy inputs for Las Positas. The factors for calculating energy consumption come primarily from a Contra Costa Count Manual prepared by Interactive Resources, Inc.

Residential energy inputs are calculated for each of four housing types: single family - conventional, single family-zero lot line, townhouse and condominium/apartment. Nonresidential inputs are classified by: commercial (including office and centers), industrial, public and institutional, parks and recreation, and transportation. Operational inputs for wastewater treatment and the water system have been calculated independent of the standard factors provided by Interactive Resources Inc., so as to more accurately reflect the systems proposed for Las Positas. In the case of the water system, since the proposal is for a dual system, the standard factor was doubled. All operational inputs have been modified by a buildout factor in order to account for the phasing of development over time. All figures in the table are given in therms (1 therm = 100,000 BTU = 29.3 KWH). For reference, one barrel of crude oil is equal to 58 therms.

The estimated total direct and indirect energy input for the proposed project over 20 years is 1,145,836,200 therms. At buildout, annual operating energy consumption would be approximately 70,363,405 therms or 3,900 therms per unit.

The project proposal includes a number of design elements which could result in overall efficiencies in energy use. These include: a high proportion of attached residential units; a mix of commercial, industrial/office, and residential uses allowing for a reduction in travel distances; provision of pedestrian and bicycle paths allowing for a reduction in the number of auto trips within the project area; and clustering of proposed uses allowing for efficiencies in the design, construction and operation of infrastructure.

Mitigation

Several energy conservation measures in addition to those basic to the project proposal could be incorporated into it which would further reduce overall energy consumption:

o Passive and Active Solar Systems

The Livermore-Amador Valley has a relatively high percentage of sunny days and is therefore well suited for both passive and active solar applications. With current technology, solar can be efficiently used for domestic hot water and space heating as well as commercial and industrial space heating. It is difficult to estimate what the energy savings for a project the size of Las Positas might be, but the potential is significant. Both federal and state policy encourage solar applications. Solar applications could also be encouraged through the county zoning and development review and building permit processes.

o Wind Energy

Much of the Livermore-Amador Valley experiences relatively strong and steady westerly winds throughout the spring and summer months making wind power generation a feasible energy option. Ridgelines surrounding the Las Positas Valley have the potential of being excellent locations for windmills and could provide energy for mechanical pumping of water or sewage and generation of electricity.

o Conservation In Residential Construction

P.G. & E. currently has a program to encourage residential energy conservation. Many of these measures are currently mandated by Code:

1) insulation
2) use of natural gas for heating and cooking
3) installation of double pane windows
4) skylights
5) lot and building orientation with regard to sun
6) use of landscaping for wind breaks, shading in hot months and allowing full exposure in winter months
7) use of attic fans and other ventilation devices
8) use of water cooled cooling systems, as they operate at a lower condensing temperature, resulting in less electrical usage.

- Conservation In Office and Industrial Construction

Many of the elements applicable to residential uses would also apply to office construction. Additional conservation methods include:

1) use of fluorescent lighting rather than less efficient lighting
2) installation of windows which open
3) use of heat reflecting windows and draperies
4) lighting switches and multi switch provisions for control by occupants and building personnel to permit optimum energy use

- Transportation

The proposed Transportation System Management measures for the project, reviewed in Section 5.7, would allow for a reduction in transportation energy requirements.

TABLE 5.63
ENERGY INPUTS

ENERGY INPUTS	THERMS/UNIT				THERMS (SUBTOTAL)				TOTAL	
	SF CONV.[a]	SF CLUSTER	TOWNHOUSE	WALKUP	SF CONV.[a] DU-2,591[b] RD-139,566[c]	SF CLUSTER DU-6,209 RD-154,551[c]	TOWNHOUSE DU-4,680 RD-54,363[c]	WALKUP DU-4,520 RD-39,378[c]	ONE TIME TOTAL	20-YEAR TOTAL
SITE DEVELOPMENT										
Major Road (217,800 feet)		78/ft							16,988,400	
Minor Road	63/ft	63/ft	72/ft	90/ft	8,792,658	9,736,713	3,914,136	3,544,020	25,987,527	
Residential	3,825/unit	2,841/unit	2,048/unit	1,383/unit	9,910,575	17,639,769	9,584,640	6,251,160	43,386,144	
CONSTRUCTION INPUTS										
Residential	14,511/unit	11,056/unit	7,542/unit	6,070/unit	37,598,001	68,646,704	35,296,560	27,436,400	168,977,665	
Commercial (2,485,098 sf)		8.1/sf							20,129,294	
Industrial (7,363,818 sf)		8.1/sf							59,646,926	
Public & Institutional (6,403,320 sf)		8.1/sf							51,866,892	
Parks & Recreation (10,018,800 sf)		2.0/sf							20,037,600	
OPERATION INPUTS (20 years)										
Residential	46,500/unit	46,500/unit	34,400/unit	30,100/unit	120,481,500	288,718,500	160,992,000	136,052,000		706,244,000
Utility & Infrastructure	1,504/unit	1,533/unit	1,326/unit	1,233/unit	3,896,864	9,518,397	6,205,680	5,573,160		25,194,101
Commercial (2,485,098 sf)		19.3/sf								47,962,391
Industrial (7,363,818 sf)		68.1/sf								501,476,006
Public & Institutional (3,811,500 sf)		8.4/sf								32,016,600
Parks & Recreation (Yearly)										
Neighborhood (18)		500/park								180,000
Community (2)		64,500/park								2,580,000
TRANSPORTATION										
(18 mpg, 225,900 VMT/day at buildout)		1.52/gallon								91,615,000
							SUBTOTAL		407,020,448	1,407,268,098
							BUILDOUT FACTOR			x .525
										738,815,752
							TOTAL			1,145,836,200

[a]Single Family Conventional
[b]Number of Dwelling Units
[c]Feet of Roadway

Source: Interactive Resources, Inc.

5.12 LAND USE

Setting

Figure 5.16 indicates existing land uses (1982) within and in the vicinity of the Las Positas project area.

Project Area

Parcelization and Ownerships

In June, 1982, there were 72 assessors parcels within the area noticed for rezoning in the current consideration. These parcels ranged in size from approximately one-half acre to over 500 acres in size. There were approximately 29 parcels of under 10 acres each; 11 parcels from 10 to 40 acres in size; 15 parcels from 40 to 100 acres; and 18 parcels larger than 100 acres. The total land area in the noticed area is approximately 4,800 acres. Approximately 400 acres of this is outside the area proposed for urban development by the project sponsors. The sponsors indicate that they hold options on 24 parcels in the noticed area, including about 2,900 acres.

In November, 1982, there were fifty-one separate recorded ownerships in the noticed area.

Land Uses

Agricultural and Residential Uses

Currently the predominant land use in the project area is agricultural. This consists primarily of cattle grazing and dry farming of grains and hay crops.

The majority of the properties in the area have some structural improvements on them; most improvements consist of a single-family dwelling; (homeowners property tax exemptions were recorded for twenty-three parcels). A number of properties also contain agricultural outbuildings.

Most of the residences in the area are widely scattered; an exception to this pattern occurs along Bel Roma Road, which extends north from May School Road approximately one mile. Bel Roma Road bisects a rectangular area of about 90 acres which is divided into roughly equal plots of about five acres each. A single-family residence has been built on each of twelve of these plots; three plots are vacant.

Other Uses

The Pleasanton Rod and Gun Club is located in the project area west of Dagnino Road and south of May School Road. The facility includes a practice range and training facility; it is used by local police personnel.

The 115-acre Federal Communications Commission (FCC) monitoring station is also within the project area. The station, constructed in 1947, is located between May School Road and Hartford Avenue, approximately 0.8 miles east of North Livermore Avenue, and adjacent to Lorraine Street. The station serves two primary purposes. It is an alternate control station for the monitoring branch of FCC and monitors all broadcasts from low to high frequencies. It also provides a direction finder service for the U.S. Coast Guard and other agencies.

Surrounding Areas

Hill Areas

Surrounding hill areas to the west , north and east of Las Positas are primarily undeveloped and used for livestock grazing. There is some rural residential development along Collier Canyon Road, to the west and along Laughlin Road, to the east of the project area. In addition to these are some clusters of suburban estate uses in Contra Costa County off Morgan Territory and Highland Roads, to the north of the Las Positas area.

The Vasco Road Landfill is located on Vasco Road, to the east of the project area. Southwest of the Landfill site, and north of Raymond Road is a water storage tank which serves portions of the City of Livermore. Throughout the hill area are numerous stock ponds which appear to have been created by the damming of creek channels.

To the west of the project site and located at the foot of the hills is the Livermore campus of Chabot College. The facility on Collier Canyon Road is approximately one mile north of I -580.

City of Livermore, North of I-580

The Springtown area of the City of Livermore adjoins the Las Positas project area to the south and southeast. The area includes approximately 1,400 residences; the majority of these are single-family, detached units.

A number of developments have been approved for construction in this area. These are alphabetically annotated on the Existing Land Use map, and include: a) Anden Company-Lexington Homes, 155 acres of mixed residential development located on the west side of, and adjacent to, the existing Springtown development; b) Citation Homes, which has received approval for residential development of 67 acres located south of Raymond Road, on either side of Vasco Road (at present no construction is occuring on this site); and a number of smaller residential developments (c, d, e, f, and g on Figure 5.16). These latter would include a mix of single-family detached, townhouse and multi-family residences.

The City's long-term plan for the Springtown area calls for most of the area to be developed with low to high density urban residental uses, interspersed with open space and public uses. A portion of this area, located just south of Raymond Road and adjacent to the Las Positas project area, shown as open space in the City's plan, has been set aside for some as-yet-undetermined use. The City's plans for unincorporated areas surrounding the Springtown area, call for retention of existing agricultural and other open space uses.

City of Livermore, South of I-580

The City's long-range plan covers lands in this area which are currently unincorporated. Most existing development is currently located within the City.

Within the strip of land just south of I-580 freeway, there are some large remnants of agricultural uses combined with recently established uses, including trailer parks, the municipal airport, and more recently developed commercial and industrial uses. The area includes undeveloped open space along Las Positas Creek, the Las Positas Golf Course, and a cemetary.

Impacts and Mitigation

Direct, On-Site

The proposal calls for the ultimate change of almost all existing agricultural, residental and public uses to planned urban uses. Only single-family residential uses in a portion of the Bel Roma Road area would be retained. (A total of 6 existing residences on 5 acre sites). It is expected that elsewhere all existing residences (farm homesites) would be removed. The Rod and Gun Club and the FCC monitoring station would be removed; provisions for relocation of these facilities are not indicated.

The project is proposed to be built incrementally, beginning at the south and extending generally to the north and northeast. Four phases of development, each extending a period of five or so years, are proposed. It is probable, therefore, that existing uses would continue in each phasing area until such time as each area was slated for development. Hence, some agricultural activity would continue throughout the 20 or so year build-out period. Similarly, the FCC and Gun Club facilities included in Phase IV would not be removed until around the year 2000.

Indirect, On-Site

Interim On-Site Impacts

During each phase, portions of the area would be settled by new residents and businesses, portions would be under construction, and portions would remain undeveloped, presumably in agricultural use. The potential arises, therefore, for conflicts among these activities. Impacts of construction activities on air quality (suspended particulate), impacts are discussed in Section 4.1. Impacts of the new urban population on adjoining agricultural uses would be similar to those eventually enjoyed by agricultural areas outside the project area, and as discussed below, could be similarly mitigated.

Impacts on existing rural residential uses during the period of transition would be similar, in many ways, to potential impacts on agricultural properties. The primary, immeasurable impact would be the change in the quality of the Valley setting from one with agrarian qualities to a highly urbanized one.

Successful implementation of the proposed development would, as indicated, require the cooperative participation of a number of property owners and developers, existing and future (as well as that of a number of public agencies). While there are a variety of measures by which the County can guard against premature/untimely development of any and all of the project area, there are few, if any, regulatory measures available to ensure the project's logical build-out at the rate of phasing currently envisioned. Hence, there remains the potential for amounts of "leap-frog" development within the project area. This is partially mitigated by the control which the project sponsor (Las Positas Land Company) has over approximately half of the land area proposed for development. The potential remains, however, for erratic development within the remainder of the project area.

Changes in market conditions and/or the preferences of individual property owners and developers could increase this potential or lead to pressures on the County to amend the land use plan. The fiscal/financial vulnerability of the project to fluctuations in the rate of project build-out are addressed in Section 5.8.

The effects of erratic project build-out can only be partially mitigated. First, most public utilities and facilities would be added incrementally to meet the requirements of the residential, commercial and industrial development approved for each phase; the County would be in a position to coordinate on an ongoing basis, these interrelated components of the project. Second, the progress of the development would be reviewed in total on a periodic basis; these reviews would consider trends and short-term projected changes in market conditions as well as the objectives of owners and developers. If warranted, changes to the development plan could be undertaken; substantial changes would require General Plan amendment subject to public review and comment. Third, it is possible for the County and other agencies to acquire lands needed for public purposes through the process of eminent domain; this or similar procedures may possibly be extended to other uses. Fourth, some guarantee of cooperation could be obtained through requirements, prior to each phase of development, for agreements by all (or the substantial majority of) property owners in each phasing area to all applicable provisions and conditions, including land use designations.

Potential problems in implementing the indicated land use proposal (per the Land Use Diagram) could result from the apparent discrepancies between designated land use areas and current patterns of parcelization and ownership. When superimposed on the current parcel/ownership map, a number of small and/or awkwardly shaped land use "remnants" result. This situation is not necessarily problematic in areas under the control of the Las Positas Land Company. It does present potential problems of implementation in areas where there are multiple ownerships (including County ownership of the existing rights-of-way). Some correction of this problem would occur, over time, if ownerships are consolidated. It would appear to be preferable to adjust the land use diagrams at this time, in order to minimize the problem.

The primary advantages of this alternative would be two: owners and developers could more clearly understand the specific uses proposed for each property; and second, implementation of the project would be simplified, minimizing the need for tradeoffs of remnant parcels.

The proposed development, as indicated, calls for the removal of the Federal Communications Commissions monitoring station, and development of that 115 acre site with high density residential and industrial uses.

This would require a series of actions by the Federal Government to close the Livermore monitoring facility; to relocate the facility to an alternative location action. If such an action were taken FCC indicates that the costs for relocation would be approximately one million dollars (1982 dollars). They also note that the site, if then declared surplus, would be offered for sale to a public agency, rather than a private developer. FCC states that its plan calls for the continued use of the current facility, which has received funds for refurbishing. If the facility remains, the uses proposed for the site, industrial and high density residential, could not be developed. Neither would it be possible to complete the arterial link proposed south of the Town Center/Office area between North Livermore Avenue and Lorraine Street. The proposed inner loop arterial would also need to be realigned to skirt the FCC site along its northern boundary. The effect would be a net reduction in the overall amount of proposed industrial use (with a corresponding reduction in employment) and reduction in the amount of high residential development (and corresponding reduction in resident population). Adjustment to the proposed circulation system would be required. Retaining the FCC facility could result in a number of conflicts between the operations of the station and proposed land uses in the area. Arc welders, furniture gluing facilities, or any high frequecy radiation devices, electric substations, etc., as well as automobile ignition along main roads in the area, could also interfere with the stations operations. These effects could be mitigated somewhat through regulations on land uses, imposed by the County. Station operations would also result in interference with radio and television reception in the project area (particularly to the north of the facility). Further coordination with FCC would be required to more precisely determine and define, if possible, necessary measures to minimize any potential adverse interaction between the station and the proposed land uses.

The Las Positas Land Use diagram indicates approximately half of the Bel Roma Road area for rural density residential uses; the remainder of this area is shown for high density residental uses. Consultants to the project sponsors indicate that there was a graphic error, and that the entire area should be designated for rural use. This would allow for only limited additional residental development (say, doubling the total number of units). The rural density uses would eventually be surrounded by higher density and higher intensity uses; the town center and high density residential development are proposed to the south; high density residental is proposed to the east and west; and low density residential is proposed to the north of Bel Roma Road area.

The proposed Las Positas development would significantly alter the existing rural/architechural character of the entire Las Positas Valley. This impact is unavoidable, although some limited mitigation of this effect could be obtained in the Bel Roma Road area through zoning and site development provisions to "buffer" the area, visually, from the surrounding uses. Conflicts could occur between the remaining rural uses and activities and the surrounding urban uses.

These include problems with litter, broken fences, trespassing, harm to livestock and other animals as well as complaints from surrounding areas. Again, some mitigation of these conflicts is possible through appropriate zoning and site development requirements. Other short- and long-term impacts of the proposed development (eg. construction noise, vehicular noise among major arterials, air pollution, etc.) would be similar to those experienced elsewhere in the adjoining the project area; these are discussed elsewhere in the EIR. Further mitigation could be achieved through the redesignation of the area surrounding the Bel Roma Road area to lower densities, which would be more compatible with the existing rural residential uses. This would be contrary to, and would significantly alter the basic design concept for Las Positas. An alternative, higher intensity designation of the Bel Roma Road area would essentially eliminate the noted land use conflicts, be more in keeping with the development concept for the community, and more equitable to existing property owners. The alternative, high-density residential designation would add to the total units proposed for Las Positas. This could, if required, be compensated for through slight reductions in densities for the remainder of the project area. Implementations of this alternative would perhaps be more difficult in the Bel Roma Road area than elsewhere, due to the smaller parcels and number of ownerships. A specific plan or other similar mechanisms would be needed to allow for the orderly and complete transition from existing rural to high density residential uses.

Impacts on Surrounding Land Uses

Existing and Planned Urban Uses

These adjoining urban uses are concentrated in the Springtown area of Livermore, adjoining the Las Positas project area to the southeast. It is not expected that the proposed change in land uses within the Las Positas project area would require any substantial change in existing land uses in this area, or changes in plans for future development as indicated in the City of Livermore General Plan. It is recognized that traffic generated by Las Positas could impact residential uses in Springtown, and in other developed or planned residential areas in the City adjoining major arterials travelled by Las Positas residents and employees. Noise, air quality and traffic impacts are discussed, respectively, in Sections 5.10, 4.1, and 5.7 of this EIR. Some mitigation is possible through design, buffering or insulation measures, rather than through land use changes. Some of these measures could be implemented at the time facilities improvements are undertaken, all or part of which would be funded by the Las Positas project.

The Las Positas project may indirectly induce changes in existing or planned urban areas in the PMA. The project could induce pressures to add new highway commercial uses along major arterials feeding into Las Positas. The character of commercial areas in Livermore could change resulting from the expanded consumer market in the vicinity and due to the secondary impacts of planned business and industrial uses in Las Positas. These and other similar effects cannot be directly mitigated by the County but would be subject to the control of the cities through standard zoning and general plan procedures.

Existing and Planned Open Space Areas

Urban development and activies in the Las Positas area could adversely affect agricultural uses in adjoining open space areas. Problem of increased litter, vandalism, harm to livestock, etc., could increase, as could complaints from urban residents regarding normal agricultural operations (dust, pesticides, odors). Some mitigation of these problems would result from the availability of urban level police and fire protection services in the Las Positas community, provided that these services could be made available to properties outside the proposed County Service Area. Further mitigation could result through overall community design and through specific site development features to buffer the agricultural uses.

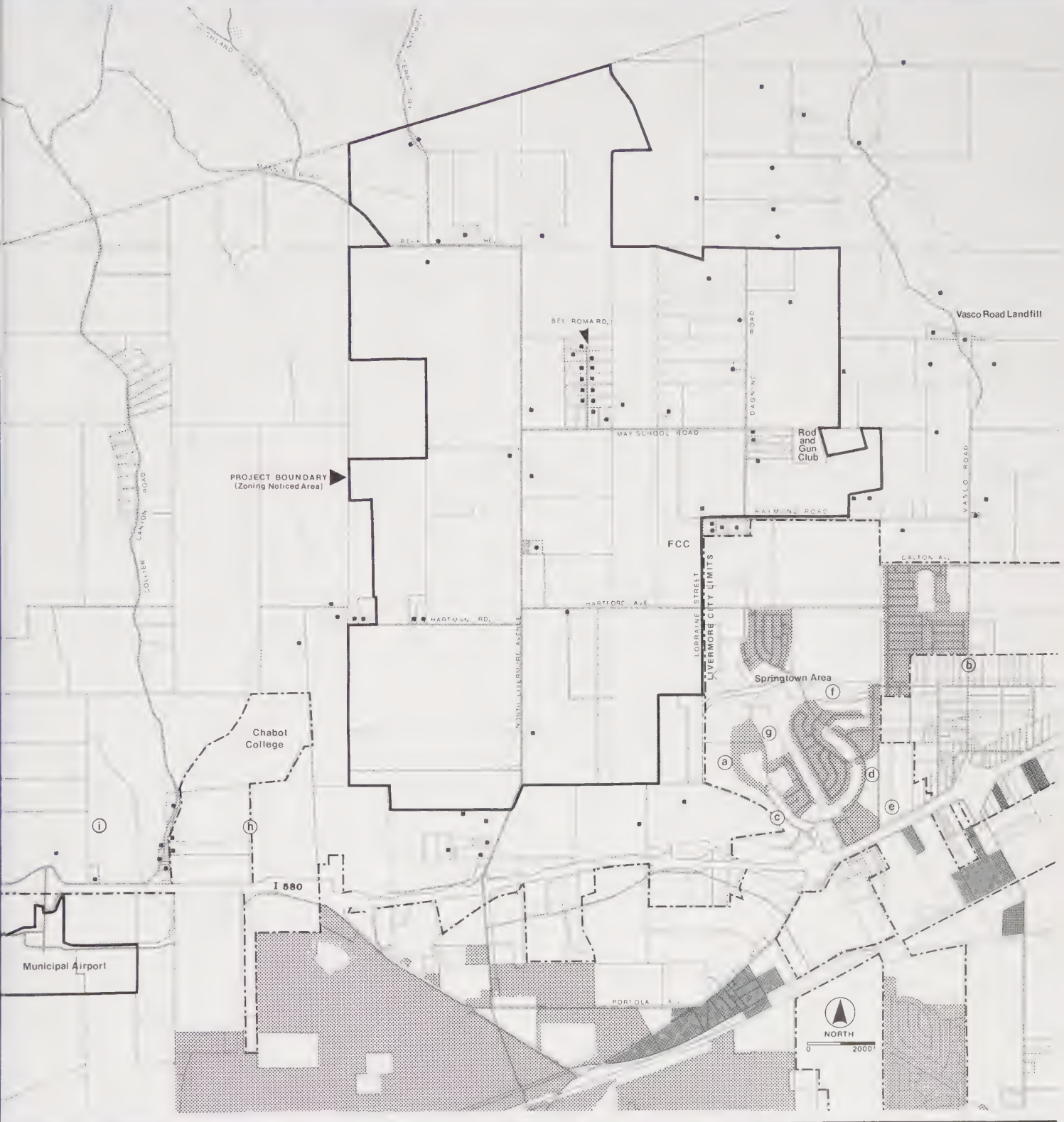
Approximately 320 acres adjoining the noticed Las Positas project area have been identified which could be developed, subject to environmental criteria used for lands in the noticed area, and which could be served by extensions of the proposed infrastructure. These areas could accommodate an additional 600 to 2,000 units, depending on the density assumed (2 to 7 units per acre would probably be an appropriate range). The development pressures induced by Las Positas on these lands is not readily mitigated, particularly in consideration of the need for a consistent set of development criteria applicable to all lands in the general area (as part of the County General Plan). These areas could be guaranteed as open space through their acquisition by the County, by the CSA and dedication in perpetuity to agricultural or other open space uses, or through the acquisition of development rights.

Redesignation of these areas to allow for urban development, served by Las Positas infrastructure, would effectively remove these pressures and allow for greater consistency in the application of the County's plan policies. This could be accomplished through an action by the County in conjunction with its decision on Las Positas, or could be postponed.

The addition of 600 to 2,000 units would substantially worsen a number of project environment impacts (traffic, air quality) and require the modification of some public services proposals. Limits on overall amounts (or on the overall net effects) of development should therefore be established for the larger area.

The project could indirectly contribute to pressures for development of areas, in Alameda County or adjoining counties, currently designated for continued agricultural uses. County approval of the project could serve as a precedent for projects in other unincorporated areas. The amount of potential development that could result is not measured at this time. These projects would be subject to Plan amendment and environmental review procedures currently applied to the Las Positas proposal.

The Las Positas development (at or prior to build-out) could create demands for additional (unplanned) residential or commercial and industrial development in areas within and beyond the Primary Market Area, to the extent that Las Positas does not result in a "balance" of housing and employment (internal to the project, or within the larger PMA). This is probably best mitigated through periodic review of development in Las Positas to assess these impacts, and to the extent possible, adjust project phasing to minimize them.

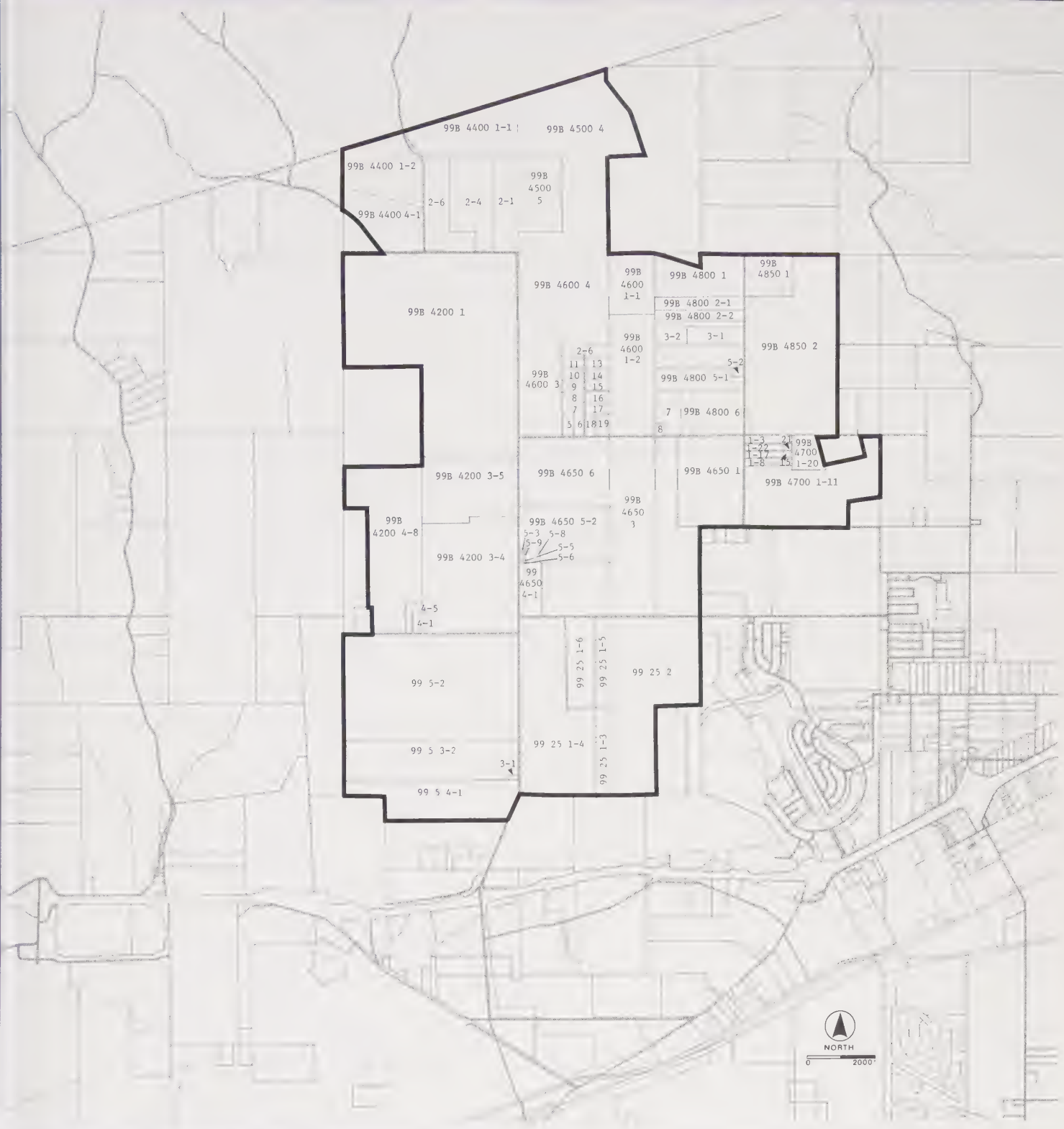


1982 EXISTING LAND USE

FIGURE 5.16

(a) ANDEN COMPANY (LEXINGTON HOMES) - 155 ACRES-MIXED RESIDENTIAL
(b) DEVELOPER UNKNOWN - 10 ACRES/30 UNITS - MIXED RESIDENTIAL
(c) DEVELOPER UNKNOWN - 12 ACRES/123 UNITS - TOWNHOUSES
(d) DEVELOPER UNKNOWN - 2.5 ACRES/7 UNITS - SINGLE FAMILY
(e) DEVELOPER UNKNOWN - 13.3 ACRES/50 UNITS - DUPLEX
(f) CITATION HOMES- 41.5 ACRES/117 UNITS - SINGLE FAMILY & DUPLEX
(g) CITATION HOMES - 67 ACRES
(h) FOLEY - 300 ACRES/LOW INTENSITY INDUSTRIAL
(i) BROADMOOR DEVELOPMENT CO. (NORTHBLUFF) - 393 ACRES/1,750 DWELLING UNITS: COMMERCIAL: AND PUBLIC

RURAL RESIDENTIAL
URBAN RESIDENTIAL
COMMERCIAL AND INDUSTRIAL
BUILDING SITE (SELECTED STRUCTURES ONLY)



PARCELIZATION

FIGURE 5.17

5.13 HISTORICAL AND ARCHAEOLOGICAL FEATURES

Setting

Historical Features

There are no recorded historical sites in the project area. The site of the Robert Livermore residence, the first wooden building in the valley built in 1849 is located in Livermore, about a third of a mile north of present-day Junction Avenue.

Archaeological Features

An archaeological reconnaissance of the subject site and vicinity was conducted in 1973 by M. Holman, Assistant Curator of the A.E. Treganza Anthropology Museum, California State University, San Francisco. The report indicates that one site, Alameda 47, is located immediately beyond the proposed Las Positas boundaries on a knoll about 300 to 400 feet west of Las Positas Creek and no further than 200 feet north of Interstate 580. If this site is the location marked on available maps, it would appear to have been entirely destroyed during construction of an access road paralleling the freeway.

The report further states that:

> "The aboriginal peoples who occupied the area of the archaeological reconnaissance are called Costanoan and were a part of a greater group of Indians of the Penutian Language family. The Costanoans occupied the territory that extended from the Golden Gate, south to Point Sur and from the point where the San Joaquin and Sacramento Rivers enter San Francisco Bay, southward along the crest of the mountains of the Diablo Range including the drainage of the San Benito River as the southernmost boundary. Very little is known about the peoples who occupied this region before the arrival of the Spanish for it was only a short time until the aboriginal culture was totally absorbed into the Mission social system."

The proximity of Alameda 47, as well as sites Alameda 42, 44, and 46 south of Interstate 580 and about one mile west of the City of Livermore, support the theory that the Costanoans may have occupied the Las Positas Valley. Holman's report recommends that areas near water sources within the project site, particularly those foothills which afford some protection from weather, should be further investigated as potential archaeological sites.

Impacts and Mitigation Measures

No apparent historic or prehistoric cultural resources would be affected by the project. However, it is known that this portion of the Livermore Valley contains deeply buried prehistoric deposits that sometimes cannot be detected by surface reconnaissance. In the event that buried deposits (as evidenced by concentrations of charcoal, bone, human remains, artifacts, or unnatural rock) are unearthed during construction excavation, all excavation should be halted temporarily within 50 meters of the find, the Planning Department notified, and a qualified archaeologist called in to examine the find and to make appropriate recommendations. (At this time, the Planning Department will also contact a representative of the Native American Heritage Preservation Project.)

6.0 UNAVOIDABLE ADVERSE IMPACTS

The following adverse impacts are considered to be those which cannot be mitigated to acceptable levels or avoided through adjustments to the basic project. A number of other, potentially adverse impacts have also been identified in this EIR. These may be eliminated and/or mitigated to acceptable levels through measures identified in the EIR. These other, potentially adverse impacts, would need to be added to the following list if the identified provisions for mitigation were not carried through.

Biologic Conditions:

- Permanent removal of some native specimen trees.
- Possible removal of some endangered plant species.
- Displacement of some native wildlife species.

Transportation Services and Facilities:

- At buildout, "D" or worse levels of service during peak hours on the segment of I-580, between Airway Boulevard to El Charro; the Airway Boulevard freeway ramp; the segment of State Route 84, Portola Avenue to Second Street; Springtown Boulevard, I-580 to Bluebell Drive; Vasco Road, Northfront Road to I-580; and North Livermore Avenue, north of I-580 to the project area.

Visual and Aesthetic Conditions:

- Permanent change in the appearance of the area; loss of rural/agricultural qualities.

Acoustical Conditions:

- Increased noise levels within and outside the project area due to increased traffic levels; unacceptable levels in some existing and planned residential areas.

Energy

- Increased energy consumption

Land Use

- Permanent loss of agricultural production within the project area, and possible permanent loss of agricultural production within the County and region if project area production is not or cannot be relocated.
- Possible adverse interference with operations of the FCC monitoring station.

7.0 ALTERNATIVES

7.1 "No Project" Alternative - Existing Communities as Cores of Urban Development

This "no-project" alternative would retain existing county and city land use proposals and policies. The alternative would eliminate impacts associated with the proposed urban growth in the Las Positas project area; the area would be retained in agricultural use through approximately 2000; a portion of the project area would eventually undergo residential development per the City of Livermore General Plan.

Under this alternative, projected year 2000 housing units in the Livermore-Amador and San Ramon Valleys would total between 85,000 and 89,000 units, an increase of between 31,600 and 35,900 units over 1980 existing.

Impacts of this alternative would primarily be those resulting from planned urban development within the existing urban centers - Livermore, Pleasanton, Dublin and San Ramon.

7.2 - EXPANDED PROJECT: High Density Development

The high density development alternative was considered during the conceptual planning process for Las Positas. See Table 7.3 for a profile. The alternative entails an increase in total project average density and the addition of approximately 5,400 dwelling units to the proposal. Existing project boundaries are maintained as are density categories.

Under this alternative an increased level of service would have to be provided by all service providers. By the year 2000 there would be a demand for approximately an additional 1.8 mgd of water and an additional 1.63 mgd of sewage would be generated. Sewage treatment facilities would have to be expanded to meet this demand.

In order to maintain acceptable service levels, police and fire districts will have to increase staff and vehicles. Approximately 1,080 K-8 students and 864 high school (9-12) students will demand school space as a result of the added development and based upon a factor of one acre of park land per 50 dwellings, 100 acres of parks will be required.

The alternative would result in substantially worse traffic impacts with corresponding air and noise impacts, insofar as the number of households would increase, with no change in local (project area) job opportunities. These impacts are not quantified.

TABLE 7.3

HIGH DENSITY DEVELOPMENT ALTERNATIVE

o **Residential**

	Average Density	Gross Acres	DU	Percent	Household Size	Population
	2.0	349	698	3	2.75	1,920
	4.5	312	1,404	6	2.75	3,861
	8.0	175	1,400	6	2.75	3,850
	10.0	585	5,850	25	2.60	15,210
	24.0	244	5,856	25	2.65	15,518
	32.0	256	8,192	35	2.15	17,613
Totals	12.18	1,921	23,400	100	2.48	57,972

o **Commercial**

Town Center	40 acres	
Village Center	60 acres	
Neighborhood Center	20 acres	
Total	120 acres	

o **Employment**

Office	60 acres	
Research & Devel./Man.	483 acres	
Total	543 acres	

o **Transportation**

Transit Center	12 acres	
Major Roads	350 acres	
Total	362 acres	

o **Public & Institutional**

Elementary	100 acres	(10)
Intermediate	80 acres	(4)
Senior High	105 acres	(3)
Government	12 acres	
Institutional & Church	38 acres	
Wastewater Treatment	215 acres	
Total	550 acres	(17) schools

o **Recreation**

Parks	300 acres	
Open Space	620 acres	
Total	920 acres	

o **Totals** **4,416 acres**

7.3 REDUCED PROJECT: Low Density Development

As shown in Table 7.4, the low density development alternative assumes a lower overall density than that of the project proposal. This results in a dwelling unit total of 5,600 fewer units than proposed.

With this reduced population, comes a reduction in the demand for public services. Each service provider could reduce the amount of service provided while maintaining acceptable service levels. At full development, demand for water with this alternative is estimated to be 1.8 mgd less than for the proposal. Sewage flow would be reduced by 1.63 mgd, yielding a decreased demand for treatment plant capacity. The demand for increased fire and police staffing and capital improvements will also be less than for the proposal. Under the low density alternative there would be approximately 1,080 less K-8 students and 864 fewer high school students. Acreage devoted to recreational use and open space would also be less under this alternative (approximately 100 acres).

Traffic, as well as related air quality and noise impacts, would probably be only slightly less than those of the proposed project insofar as a greater proportion of units would be detached (generating a greater number of trips per unit than attached units). This may be offset, somewhat, by the higher ratio of local job opportunities to employed residents (22,200 jobs versus 17,000 employed residents in 2005).

TABLE 7.4

LOW DENSITY DEVELOPMENT ALTERNATIVE

o Residential

	Average Density	Gross Acres	DU	Percent	Household Size	Population
	1.0	378	378	3	2.75	1,040
	2.0	378	756	6	2.75	2,079
	3.0	252	756	6	2.75	2,079
	4.5	700	3,150	25	2.60	8,190
	7.0	450	3,150	25	2.65	8,348
	10.0	441	4,410	35	2.15	9,482
Totals	4.85	2,600	12,600	100	2.48	31,218

o Commercial

Town Center	40 acres	
Village Center	36 acres	
Neighborhood Center	12 acres	
Total	88 acres	

o Employment

Office	60 acres	
Research & Devel./Man.	483 acres	
Total	543 acres	

o Transportation

Transit Center	8 acres	
Major Roads	247 acres	
Total	255 acres	

o Public & Institutional

Elementary	60 acres	(6)
Intermediate	60 acres	(3)
Senior High	35 acres	(1)
Government	8 acres	
Institutional & Church	22 acres	
Wastewater Treatment	125 acres	
Total	310 acres	(10) schools

o Recreation

Parks	160 acres	
Open Space	460 acres	
Total	620 acres	

o Total 4,416 acres

7.4 REDUCED AMOUNTS OF INDUSTRIAL/BUSINESS/OFFICE DEVELOPMENT

It is possible that future market demand for office and business/industrial park areas may be insufficient to support the amount currently called for in the proposed Las Positas development, particularly considering the significant amounts of commercial/industrial land projected to be available elsewhere in the Livermore-Amador and San Ramon Valleys. If this were the case, it is possible that a part of these lands within the Las Positas project area would remain undeveloped or be subject to pressures for other uses. In the current alternative, it is assumed that approximately half, or 272 acres, of the office/business/industrial use areas would be developed. It is assumed that the remaining acreage would then develop with residential uses at an average of 8.1 units per acre (community average residential density). The alternative would, therefore, reduce total available jobs in the proposed project area from approximately 22,200 (at buildout) to 13,300. Residential units would increase from 18,000 to approximately 20,000.

These changes would increase service requirements for residential uses in the project area--schools, parks, local commercial facilities, health services, etc.--but would also reduce service requirements of industrial and office uses. Sewer and water service requirements would not be changed significantly. The major impacts of the alternative would be on both internal and external traffic levels and on air quality and noise impacts resulting from this change. Traffic levels, particularly on road and freeway facilities external to the proposed project area, would increase due to the reduction in job opportunities within the area and the need for a greater proportion of area residents to commute to jobs elsewhere in the PMA and region. These traffic levels would also increase due to absolute increases in the number of households within the area. Table 7.5 presents projections (year 2005) of vehicle to capacity ratios and levels of service for the alternative project. For comparison, these are also presented for the project as originally proposed. Both include impact mitigation resulting from facilities improvements discussed in Section 5.7. The maximum effects of Transportation System Management (TSM) strategies (25% reduction in volumes generated by Las Positas) are indicated for both scenarios.

Peak hour and maximum eight hour projected carbon monoxide concentrations within the project would be expected to be less than the project as proposed, primarily because a greater number of jobs-related trips would occur outside the project area. Carbon monoxide concentrations outside the project (at locations indicated in Table 4.3) are projected to be comparable to those of the proposed project. Projected hydrocarbon emissions resulting from the alternative project would be approximately 50 percent higher than those indicated for the project in Table 4.4, primarily because of the greater number of longer work trips of project area residents.

These assessments of traffic impacts for the subject alternative suggest, but do not exactly correspond to, a somewhat similar scenario in which a portion of project traffic volume, greater than that modeled in Section 5.7, occurs outside the project area. In Section 5.7, the traffic impact analysis assumes that 60 percent of peak hour and 65 percent of daily traffic volumes generated by Las Positas uses would occur within the project area. Modeling was not conducted for an alternative set of assumptions, say of 40 to 50 percent or 50 to 60 percent being external to the project.

If the latter distribution of traffic volumes were to occur, it is expected that the impacts would fall between those indicated in Table 7.5 for the current alternative.

TABLE 7.5
PM PEAK HOUR VOLUME-TO-CAPACITY (V/C) RATIO PROJECTIONS
FOR REGIONAL FACILITIES WITH PROPOSED ROADWAY IMPROVEMENTS[1,2] - 2005

FACILITY	PROPOSED PROJECT		ALTERNATE PROJECT[3]	
- Segment	TSM Included[4]	w/o TSM	TSM Included[4]	w/o TSM
Interstate 580 (Mainline Sections				
- State Route 84 to Livermore Ave.[5]	0.60	0.65	0.60	0.70
- Livermore Avenue to Portola Ave.[5]	0.70	0.80	0.75	0.90
- Portola Avenue to Airway Blvd.[5]	0.85	1.00	0.95	1.05
- Airway Boulevard to El Charro[5]	1.00	1.15	1.05	1.20
Interstate 580 (Ramps)				
- Airway Boulevard Eastbound Off	0.75	0.75	0.95	1.00
Airway Boulevard Westbound On	0.90	1.05	0.80	0.90
- Livermore Avenue Eastbound Off	0.80	0.95	0.95	1.00
Livermore Avenue Westbound On	0.65	0.75	0.60	0.75
- State Route 84 Eastbound Off	0.40	0.50	0.50	0.75
State Route 84 Westbound On	0.55	0.55	0.55	0.65
- Vasco Road Eastbound Off	0.75	0.75	0.75	1.05
Vasco Road Westbound On	0.75	0.85	0.80	0.85
State Route 84				
- I-580 to Portola Avenue[7]	0.60	0.65	0.65	0.70
- Portola Avenue to Second St.[6]	0.90	0.95	0.95	1.05
Springtown Boulevard				
- I-580 to Bluebell Drive	0.90	1.05	0.95	1.20
Vasco Road				
- Northfront Road to I-580[6]	0.90	1.05	1.05	1.45
- I-580 to WP Tracks[6]	0.65	0.70	0.70	0.75
North Livermore Avenue				
- North of I-580[7]	0.90	1.15	1.00	1.25
- I-580 to Las Positas Boulevard	0.80	0.95	0.85	1.05
- Las Positas Blvd. to Portola Ave.	0.80	0.95	0.85	1.05
Portola Avenue				
- I-580 to Livermore Avenue	undefined[8]	undefined[8]	undefined[8]	undefined[8]
New Collier Canyon Road				
- I-580 to New Road "A"[7]	0.80	0.85	0.80	0.90

Notes: 1 Relationship between v/c and level of service provided in Table 5.35.
The following hourly capacity volumes were used for analysis:

8-lane freeway =	16,000 vph	1-lane ramp =	1,500 vph
6-lane arterial =	4,500 vph	2-lane ramp =	2,400 vph
4-lane arterial =	3,000 vph	Auxiliary lane =	1,500 vph

2 Assumes that all identified physical roadway improvements described under Mitigation Measures in Section 5.7 will be in place.

3 This alternate project would include 272 acres of employment uses (half of proposed project) and 272 acres of 8.1 unit per acre residential areas (additional to proposed project).

4 A 25 percent TSM program was assumed for Las Positas only (no other participation).

5 Assumes 10-lane freeway configuration (8 lanes plus auxiliary lanes).

6 Assumes 4-lane arterial configuration.

7 Assumes 6-lane arterial configuration.

8 This v/c ratio would depend on City of Livermore improvements, such as the re-alignment of State Route 84.

Source: Wilsey & Ham

7.5 ALTERNATIVE LAND USE DIAGRAM: Comparable Housing and Employment

Figure 5.18 illustrates a possible alternative land use and circulation diagram for the project area. It incorporates the following changes, many of which are in response to issues raised in the current EIR or in response to comments raised during public review of the June, 1982, Draft EIR for the project:

1. The proposed development would, as discussed in Section 5.12, induce pressures for urban development in agricultural lands adjoining the project area. In the current alternative, areas adjoining the designated project area and which would logically be developed and provided urban services are designated for suburban and low density residential development. These areas total approximately 320 acres and, under the residential designations indicated in Figure 5.18, could add approximately 600 - 2,000 units. To minimize the impact of this, corresponding reductions in amounts of residential use within the previously noticed area, could be made, such that residential units would total approximately 18,000, and the mix of single family and multi-family remain comparable to the proposed project.

2. While the concept described for the proposed project indicates that lands where slopes exceed 15 percent would normally be excluded from development, the Diagram (Figure 2.1) does designate some of these hill areas for residential use. The current alternative changes the designation of these areas from residential to open space.

3. Application of the proposed Land Use Diagram to the existing pattern of property ownerships results in the "creation" of a number of awkwardly shaped and/or small remnant parcels, particularly where the proposed curvilinear road system is superimposed on the rectilinear pattern of parcelization. The current alternative adjusts boundaries of the different land use areas and adjusts the proposed street system to minimize these.

4. The conceptual Diagram has designated proposed locations of major public facilities--community parks, high schools, intermediate schools, and the site of the wastewater treatment facility. The possible pattern of the "wastewater irrigation" open space system is schematically indicated in Figure 2.4. The current alternative suggests appropriate locations for most public facilities, including all schools (elementary as well as high and intermediate schools); most neighborhood parks and all community parks (neighborhood parks are indicated where they would occur adjoining schools--sites of other needed neighborhood parks are not shown nor are "wastewater irrigation" open space areas); the site of the wastewater/groundwater treatment plants; and possible sites needed for brine evaporation ponds.

5. The Livermore-Valley Unified School District (which would need to review the location of all school facilities) has stated its objection to the location in the proposed Diagram of high schools and intermediate schools in close proximity to each other. The alternative diagram has shifted the position of these facilities.

6. In Section 5.7, two new connectors between the project and I-580 are identified as mitigation of project traffic impacts. These two facilities are included as elements of the alternative circulation diagram.

7. The proposed project allows for urban development of the habitat area of C. palmatus, identified as a rare and endangered species. The alternative diagram shows all of the identified habitat area as open space. Neither the proposed nor the current alternative diagram explicitly designate significant riparian habitat areas along creek channels in the area. It is expected that protection of these corridors could be accomplished through more specific design review procedures.

8. The proposed Diagram indicates a portion of the Bel Roma Road area for very low density (rural) residential use. The current alternative recognizes that this may be inappropriate for this area located immediately north of the proposed town center. High density residential uses are proposed for the entire Bel Roma Road area.

9. The project proposal proposes ultimate urban residential and industrial development within the FCC site. In the current alternative, it is assumed that the Federal Communications Commission will continue to use the site as a monitoring station. The alternative removes the proposed urban use designations. The project proposal street system is also revised, eliminating sections of new roadways proposed to cross the FCC site.

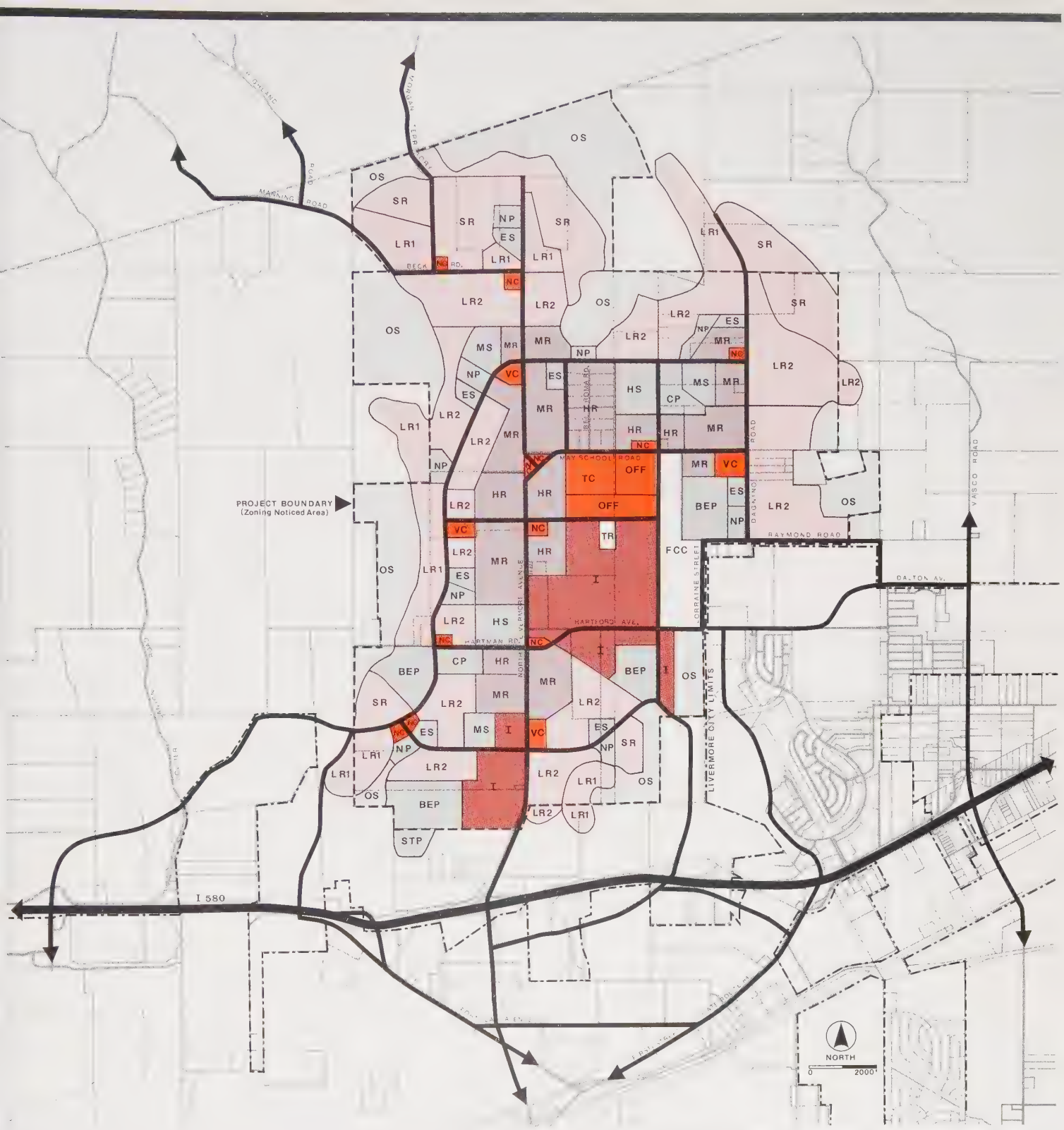
10. The concept of a "density gradient" is called for in the proposed project. This concept is generally followed in the alternative. The alternative also uses slopes as a basis for defining overall residential densities. Higher densities would be permitted in flat to gently sloping areas and lower densities in moderately sloping areas. No development would be permitted in areas where slopes exceed 15 percent.

11. The Rod and Gun Club is excluded from the proposed urban area. The alternative provides for roughly the same number of residential units, with the same proportion of single family to multi-family units as the proposed project. Industrial/business park acreage is reduced slightly. Commercial acreages are nearly identical, as are acreages of schools, parks, and other public facilities. Local impacts on services and utilities (and fiscal impacts), therefore, would be comparable to those of the proposed project.

    The alternative would not have significantly different fiscal impacts than those associated with the project. It is largely equivalent to the proposed project in terms of the total number of units, their costs and prices, and the capital investment and public services required. Proposed fiscal mitigation measures would apply equally to both the proposed project and the alternative. The alternative may, however, have a potential fiscal advantage over the proposed project insofar as it takes the distribution of property ownership into greater consideration and therefore could reduce the tendency of landowners to protest and could make special assessment financing easier to implement.

    Traffic impact analysis of the alternative, both within and external to the project area, shows an increase in impacts over the proposed project. This is due almost entirely to the greater number of detached single family residences provided in areas shown for suburban and low density development (SR and LR-1 in the Diagram). Without substantially altering the total amount of residential development within the adjusted project area (approximately 18,000 units), these "additional" impacts (above those

indicated for the proposed project) could be mitigated somewhat through reductions in the number of detached units. This could be accomplished through reductions in the overall number of detached units permitted throughout the project. The "lost" units could be reassigned as attached/cluster development units either within the affected subareas or elsewhere in the adjusted project area. Further mitigation would require a reduction in the total number of housing units within the project to the level where measureable improvements in traffic/air/noise impacts were indicated.



ALTERNATIVE LAS POSITAS PLAN DIAGRAM

FIGURE 5.18

RESIDENTIAL

SR - SUBURBAN DENSITY RESIDENTIAL (2.2 DU/NET RESIDENTIAL ACRE)

SR - SUBURBAN DENSITY RESIDENTIAL 1.3 DU/GROSS RESIDENTIAL ACRES

LR1 - LOW DENSITY RESIDENTIAL 3.5 DU/GROSS RESIDENTIAL ACRE

LR2 - LOW DENSITY RESIDENTIAL 6.5 DU/GROSS RESIDENTIAL ACRE

MR - MEDIUM DENSITY RESIDENTIAL 11.3 DU/GROSS RESIDENTIAL ACRE

HR - HIGH DENSITY RESIDENTIAL 18.9 DU/GROSS RESIDENTIAL ACRE

COMMERCIAL

TC- TOWN COMMERCIAL CENTER

VC - VILLAGE COMMERCIAL CENTER

NC - NEIGHBORHOOD COMMERCIAL CENTER

EMPLOYMENT AREAS

I - INDUSTRIAL

OFF - OFFICE

PUBLIC

HS - HIGH SCHOOL

MS - MIDDLE SCHOOL

ES - ELEMENTARY SCHOOL

NP - NEIGHBORHOOD PARK

CP - COMMUNITY PARK

TR - TRANSIT CENTER

STP - SEWAGE TREATMENT PLANT

BEP - BRINE EVAPORATION POND

OPEN SPACE

OS - UNDEVELOPED OPEN SPACE/ AGRICULTURAL

CIRCULATION

MAJOR STREETS (ARTERIALS AND COLLECTORS) FREEWAY

Alameda County Planning Department · March, 1983

7.6 ALTERNATIVES FOR THE PROVISION OF PUBLIC SERVICES

Annexation to Livermore

In August 1981, the City of Livermore submitted a report to LAFCO recommending expansion of the City's sphere of influence to include the southern portion of the Las Positas Valley and small areas to the east and west of the existing sphere of influence. Livermore's proposal included an analysis of service capabilities for only a portion of the Las Positas site, based upon a development program with much lesser densities. In November 1981, LAFCO resolved that Livermore's sphere of influence should be extended to the east and west, but not to the north. As a result, the Las Positas site is excluded from Livermore's sphere of influence. The reasons for the LAFCO decision primarily revolve around Livermore's willingness to extend services and ability to accommodate projected growth within the existing Livermore sphere of influence (see Resolution No. 81-43, November 19, 1981 in Appendix F). As discussed in Section 5.4, the City of Livermore General Plan identifies urban development for a portion of the Las Positas Valley in a long term phase, and has not, through public policy nor capital improvements, made long term commitments to provide public services to this area.

There would, however, be some benefits to the City if the Las Positas area were annexed, and the land uses and services proposed in this general plan amendment application were encouraged and provided by the City. These benefits would be similar to the benefits to Alameda County if the area were to remain unincorporated:

- Revenues from permit and user fees would be available to the City to provide public facilities and services.

- The City's existing administrative organization could serve the project in the early years. It would likely need to increase in size as the project developed. The City is now a full service jurisdiction, while the County would require the creation of a CSA to provide a full range of urban services.

Annexation to Dublin

Dublin is a newly incorporated city located at the intersection of I-580 and I-680, approximately nine miles west of the Las Positas site. Due to its geographic location, annexation of Las Positas to Dublin would be very difficult. Not only is the distance between the two areas relatively vast, but just east of Dublin lies approximately two square miles of federal land (Government Reservation), portions of which are occupied by the Santa Rita Rehabilitation Center. This would prove an impediment to the extension of services.

Historically, services in Dublin have been provided either by Alameda County or the Dublin/San Ramon Service District. Over time, Dublin will undoubtedly establish its own service providers, but it is not appropriate to annex a development as large as Las Positas to a city without an established, easily expanded system of service provision.

Incorporation

The principal differences between incorporation and non-incorporation of Las Positas lie in the provision of services and in taxing abilities. An incorporated city has the responsibility for providing a broad range of services, including land use planning, law enforcement, and street maintenance. These services can either be provided by the City or through contracts with outside service providers. An incorporated city is eligible for tax revenues which unincorporated areas are not designated to receive. These include sales tax, property tax, in lieu tax and other miscellaneous state collected revenues. Incorporation requires LAFCO approval.

In the first phases of development, Las Positas would probably not have an adequate population base or appropriate mix of land uses to justify incorporation. As the resident population grows, however, the option of incorporation would be reconsidered to allow residents to choose the form of government they desire.

Community Service Districts vs. County Service Areas

Community Service Districts (CSD) and County Service Areas (CSA) are two alternate mechanisms for providing service in unincorporated areas. A detailed description of the CSA proposed for Las Positas can be found in the project description and fiscal impact analysis sections of this report.

A comparison of CSAs and CSDs is summarized below:

Governance: A CSD may have its own elected board of directors or be governed by the County Board of Supervisors, while a CSA must be governed by the Board of Supervisors.

Staffing Requirements and Compensation: If governed independently, a CSD requires at least a general manager and secretary and additional employees may be hired as well. Because it is governed by the Board of Supervisors, a CSA requires no additional staff.

Range of Services: Generally, CSAs and CSDs are empowered to provide the residents of their districts with a similarly wide array of services. However, only a CSA can provide any governmental service which the County is authorized by law to perform and does not also perform to the same extent on a county-wide basis. The limitations placed upon the service capabilities of a CSD may make the packaging of existing services or the creation of new services difficult to achieve.

Range of Powers: Proposition 13 eliminated the ability of CSAs and CSDs to provide a separate tax rate area in which a property tax can be levied, and imposed a requirement for two-thirds voter approval for other taxes. For both CSAs and CSDs, all other revenues must be derived from fees for services, special taxes, a standby charge, or through bonding.

Adoption of Additional Powers: The Board of Supervisors, may by resolution, order one or more additional services to be provided within a CSA without holding an election. A CSD, on the other hand, must hold an election before it can provide additional services.

8.0 GROWTH INDUCING IMPACTS

Growth which could be induced by the proposed Las Positas development and which is discussed in the current section includes: 1) that which could occur on lands adjoining the project area; 2) that which could result indirectly through the addition of urban uses and activities to this part of the Livermore-Amador Valley; and 3) that which could result indirectly as a result of the policy precedence which would be set by the County and other responsible agencies in acting on this particular proposal.

1. Direct Growth Inducing Impacts on Adjoining Lands

   The proposed development adjoins agricultural lands along most of its perimeter. Much of these lands are moderately to steeply sloping and would not be highly suited for intensities of development similar to that proposed for the Las Positas project. Approximately 320 acres adjoining the project area are gently to moderately sloping and could be developed with between 600 and 2,000 units. Retaining agricultural zoning and open space plan land use designations for these areas could delay, but ultimately would probably be insufficient to preclude development of these adjoining areas, particularly as landowners seek treatment of their properties by the county consistent with that undertaken for properties within the Las Positas project area. More permanent mitigation would probably require the acquisition by the County or entity of the proposed Las Positas development and dedication of these lands to permanent open space uses.

2. Indirect Growth Inducing Impacts Arising from Changes in Land Uses and Activities

   Employment growth within the proposed Las Positas development could, along with other commercial/industrial/business growth within the Livermore-Amador Valley, result in increased demands, both within and outside of the Valley, for additional housing and additional secondary commercial uses beyond those currently planned. Although the proposed development would include a desirable balance of land uses, and of employment and housing opportunities, it would be atypical for the community to be entirely self-contained (even though the potential for this may be higher than in other, existing communities). Residents of the proposed development could be expected to seek employment both within and outside the community as a number of residents from elsewhere in the Valley and region may be expected to seek employment within the proposed development. This interaction is typical. As indicated in Section 5.2, it is not expected that the project would substantially alter the projected ratio of jobs to housing that would occur within the Valley without it. By itself, it would not significantly increase "demand" for housing within or outside of the Valley.

   As indicated in Section 5.12 increased activity in the vicinity of and resulting from the proposed development could induce changes in existing urban uses, or changes in the planning within areas currently designated for urban development. These changes would not represent new, unanticipated increments of growth.

3. Indirect Growth Inducing Impacts Resulting from County Actions to Approve the Subject Project

Project proponents are requesting that the County amend the General Plan and approve rezoning for the area. They are requesting that the County approve not only the concept (and a set of proposals) for urban development within the Las Positas Valley, but also a series of implementing, administrative, and financing provisions which distinguish the project from almost all other development normally subject to County review. An action by the County to approve this "package" of proposals could, therefore, establish a precedence for other similarly situated properties in the unincorporated County. The "quantitative" impact cannot be measured at this time. Some limited mitigation of this indirect impact could be obtained through policy provisions attached to the County's actions to ensure that they are specific only to the proposed Las Positas project. Ultimately, it would seem to be appropriate for the County to reassess, in a comprehensive review, its long-term development policies for the Livermore-Amador Valley. This would also be essential in order to assess potential long-term, cumulative effects that could result from any current changes in policies pertaining to the proposed Las Positas development.

9.0 ORGANIZATIONS AND INDIVIDUALS CONSULTED IN THE PREPARATION OF THIS REPORT AND TO WHICH THE REPORT WAS REFERRED

Alameda County Agencies and Commissions

County Engineering Geologist
County Administrator
County Counsel
Public Works Agency, Road Division, Flood Control
Zone 7, Flood Control and Water Conservation District
Health Care Services Agency
Sheriff's Department
Local Agency Formation Commission
Airport Land Use Commission
Solid Waste Management Authority
Library System
Fire Patrol, Livermore

Cities and Local Districts

City of Dublin
City of Livermore
City of Pleasanton
Livermore Valley Unified School District
Amador Valley Joint Unified School District
Murray School District
San Ramon Valley School District
Pleasanton Joint School District
South County Community Collete District
Livermore Area Recreation and Park District
Livermore-Amador Valley Water Management Agency
Dublin-San Ramon Services District
A.C. Transit District
Bay Area Rapid Transit District
East Bay Regional Park District
East Bay Municipal Utilities District

Regional, State and Federal Agencies and Commissions

Association of Bay Area Governments
Metropolitan Transportation Commission
Regional Water Quality Control Board
State Clearinghouse, Office of Planning and Research
Bay Area Quality Management District
Cal Trans, District 4
California Highway Patrol
Division of Mines and Geology
U.S. Geological Survey
U.S. Soil Conservation District
U.S. Environmental Protection Agency
Federal Communications Commission

Other

Contra Costa County
San Joaquin County
California Water Service Company
Livermore-Dublin Disposal Service
Pacific Telephone and Telegraph Company
Pacific Gas and Electric Company
Southern Pacific Transportation Company
Western Pacific Railroad Company
Greyhound Bus Lines
Valley Memorial Hospital
Central Contra Costa County Service
Alameda Contra Costa Health Systems Agency
Miles Holman, Professor of Archaeology, San Francisco State University
David Carpenter, Lawrence Livermore Laboratory
Haines, Tatarian, Ipsen, Architects
Kaiser Sand and Gravel
Lowry and Associates
Joe Marsh, Landscape Maintenance Consultants
Keiser, Marston and Associates
Bishop Ranch Sunset Development Company
Lawrence Livermore Laboratory
Valley Community Center
Dublin Branch Library
Earth Sciences Associates
ENGEO

10.0 OTHER ORGANIZATIONS TO WHICH THE REPORT WAS REFERRED

Alameda County Resource Conservation District
Livermore Library
Pleasanton Library
Sierra Club, Livermore-Amador Valley Chapter
Valley Times
Tri-Valley Herald
Independent
Village Pioneer
Oakland Tribune
Lone Star Industries
Rhodes and Jamieson
Alameda County Agricultural Advisory Committee
Alameda County Farm Bureau
Alameda County Cattlemen's Association

The report has also been referred to property owners within and adjoining the noticed area, and to other individuals who have requested copies. These are not listed here.

APPENDIX A & B

UNDER SEPARATE COVER

APPENDIX C

ALAMEDA COUNTY DISCRETE SEWAGE DISPOSAL SYSTEMS POLICY

July 27, 1978

Approved as to Form
RICHARD J. MOORE, County Counsel

By _____ Deputy

102 IMAGE 1254

THE BOARD OF SUPERVISORS OF THE COUNTY OF ALAMEDA, STATE OF CALIFORNIA

On motion of Supervisor Bort, Seconded by Supervisor Cooper, and approved by the following vote,
Ayes: Supervisors Bort, Cooper and Chairman Santana - 3
Noes: Supervisors None
Excused or ~~Absent~~: Supervisors George - 1
Abstained: Supervisor Raymond - 1

THE FOLLOWING RESOLUTION WAS ADOPTED: NUMBER 179175

DISCRETE SEWAGE DISPOSAL SYSTEMS POLICY

BE IT RESOLVED that an Environmental Impact Report not be done for the adoption of a new Discrete Sewage Disposal Systems Policy, and that this Board's policy for the use of discrete systems, as stated in Resolution No. 177696, is hereby clarified to read as follows:

Discrete Sewerage Facilities Policy

A. Community Systems

Discrete sewerage facilities involving community systems should be used only for existing development to correct a water pollution problem where connection to an existing conventional system is not as cost-effective a solution, or where determined acceptable by the Board of Supervisors and the Regional Water Quality Control Board on the basis of an Environmental Impact Report for a specific project and discrete system.

When used, discrete sewerage facilities must conform with the following technical, managerial, financial, and operational requirements:

1. Technical requirements. Discrete sewerage facilities must:

   a. Utilize a proven design;

   b. Be designed by an engineer with established experience in the design of similar systems;

   c. Have equipment and components designed and constructed to allow repair without bypassing inadequately treated wastewater;

   d. Be capable of continuously providing a disinfected, secondary treated effluent;

   e. Where necessary to protect groundwater resources, utilize such design equipment and components as necessary to assure that concentrations of total dissolved solids (salts) in the discharge do not exceed the level present in the local domestic water supply.

   f. Have disposal areas that are designed, constructed, and operated in a manner that will insure maximum evap-transpiration and will minimize public exposure and environmental degradation.

Specific standards and other requirements to carry out the above objectives shall be adopted by the Health Care Services Agency.

2. Managerial, financial, and operational requirements. The management and financing of community systems should be provided through creation of a county services area, or provided by the Alameda County Flood Control and Water Conservation District or the County directly if a county services area is providing all other necessary urban services for the development. Operational services should be provided by a County entity such as the Public Works Agency or the Health Care Services Agency.

B. Individual Systems

Installation of additional discrete sewerage facilities involving individual systems (septic tanks, normally) should not be allowed in areas where concentrations of such systems presently exist. Where existing concentrations cause, or may cause, water pollution problems, public management of all systems in the area should be provided as for community systems under A.2. above, and continued use of individual systems in such areas should be subject to conformance with technical requirements a. and b. of A.1. above. Areas to which this policy applies will be delineated by the Board of Supervisors upon the advice of the Health Care Services Agency and the Alameda County Flood Control and Water Conservation District; such areas normally will not include lots 100 acres or more in area or isolated groups of four or less lots.

I CERTIFY THAT THE FOREGOING IS A CORRECT COPY OF A RESOLUTION ADOPTED BY THE BOARD OF SUPERVISORS ALAMEDA COUNTY, CALIFORNIA JUL 27 1976

ATTEST: SEP 14 1976

WILLIAM MEHRWEIN, CLERK OF THE BOARD OF SUPERVISORS

BY Shirley Deal

APPENDIX D

ALAMEDA COUNTY PROCESS FOR COUNTY SERVICE AREAS TO PROVIDE PUBLIC SERVICE

ALAMEDA COUNTY PROCESS FOR COUNTY SERVICE AREAS TO PROVIDE PUBLIC SERVICES

Adopted by the Board of Supervisors
February 17, 1981

1. **GENERAL PLAN:** The initial determination of the kind and extent of public services required for new development in the unincorporated area will be made in concert with the decision to designate land for urban uses on the General Plan. An urbanization proposal could be initiated either by the County in its periodic review of the General Plan or by a developer through a request for amendment. Only land meeting one of the following criteria will be designated for urban use under the General Plan. Land presently designated for urban use that does not meet one of the following criteria shall be redesignated:

   a. Urbanization of the land is consistent with a city general plan, the city is willing and able to annex the land in the near future and the land is within the city's sphere of influence established by LAFCO.

   b. The land is within or can be annexed to a governmental services entity other than a city, which entity is capable of serving the land; the land is within the entity's sphere of influence established by LAFCO; and urbanization is dictated by other planning policies.

   c. The land cannot be annexed to or served by a city or other existing governmental services entity; provision of services through a new CSA, including sewage disposal through a discrete system, appears economically and environmentally feasible based on preliminary studies; and LAFCO has agreed conceptually to the formation of the CSA.

   Prior to action by the Planning Commission or Board of Supervisors on land proposed to be designated urban under criterion #c above, the proposal shall be referred by the Planning Department to LAFCO for its conceptual agreement and to Public Works Agency, Health Care Services Agency, Alameda County Flood Control and Water Conservation District and Regional Water Quality Control Board for assessment of the general feasibility of serving such area by means of a discrete sewerage system and administering this and other needed services through a County Service Area. Once included in the General Plan, such land will receive detailed study to assure feasilibity of the discrete sewerage system/CSA at the time actual development is proposed, concurrent with rezoning and subdivision approvals as detailed below.

2. **ZONING/SUBDIVISION APPLICATION:** When development approval is sought for land which has received qualified authorization under the General Plan for discrete sewerage system/County Service Area, the developer shall submit to the Planning Department with his application a detailed plan for providing services and this plan will be processed in the following manner:

   a. The detailed plan must include formation conditions and long-term financing for the County Services Area, and detailed plans for the construction, operation and maintenance of the necessary utility systems and/or municipal services, including the following:

      1) Engineering design drawings for the construction of utility facilities, such as sewerage systems, with a detailed estimate of construction costs, long-term monthly/yearly operating costs, maintenance costs, and equipment replacement costs in sufficient detail to evaluate the proposal.

2) How the utility facilities and/or services are to be financed including:

i) Initial financing for construction, estimated monthly user charges, and the potential for future assessments which might be needed to meet contingencies. In addition, the plan will contain proposals to insure that, should the development period extend over a greater-than-anticipated length of time prior to buildout, or should the development never reach ultimate buildout, the operation and maintenance of the necessary facilities/services will be maintained without cost liability to the County. Alternatively, the plan might provide for deferred/delayed turnover of the facilities/service responsibilities to the County until after an economically feasible buildout level has been achieved.

ii) If the plan includes dependence upon services provided by agencies other than the County, the long-term commitment to such services must be detailed and contigency plans, if required, developed to insure continuity of all necessary municipal services.

iii) The detailed plan for providing services shall provide for dedication and conveyance to the CSA of all facilities, rights of way and appurtenances relative to the total development in fee simple and at no cost to the CSA.

b. Upon receipt of such detailed plan, the Planning Department will refer the plan for review by the Public Works Agency, Health Care Services Agency, Local Agency Formation Commission (LAFCO), and, as appropriate, the Sheriff, the Alameda County Flood Control and Water Conservation District, including Zone 7 where necessary, and any other governmental entities or districts which would be concerned with the technical, organizational, financial, or environmental adequacy of the plan.

c. Once the developer's plan has been referred out for comment, the Public Works Agency, as the potential administrator of the County Service Area, would assume lead responsibility for coordinating comments on the plan and developing recommendations as to its adequacy for presentation by the Planning Department to the Planning Commission and the Board of Supervisors. At such time as the details of the plan become sufficiently resolved so that a definitive recommendation for formation of a County Service Area can be presented to the Board of Supervisors, such a recommendation would be forwarded to the Board for "approval in principle," or "denial in principle," but in neither case for actual formation of the County Service Area.

d. If the Board "approves in principle" formation of a County Service Area, then the Board would adopt a "Resolution of Application to Form a CSA" and the matter would be considered by LAFCO. If LAFCO gives permission, then the normal planning process would continue and the developer would submit subdivision plans to the Planning Department and Planning Commission under the provisions of the Map Act.

e. The development's merits would then be judged in accordance with current planning procedures until ultimately the Planning Commission made a recommendation to your Board for approval or denial of said development. In the event that your Board approved of the development, the tentative map would be approved, and at the same time final proceedings would begin for formation of the County Service Area.

f. Following tentative map approval, construction of facilities would take place under the supervision of the Public Works Agency as a part of the required subdivision improvements. The responsibilities of each department and agency which would normally be associated with this process are outlined on the attached page.

PROCESSING RESPONSIBILITIES FOR ESTABLISHING DISCRETE SEWERAGE SYSTEMS AND COUNTY SERVICE AREA

I. PLANNING DEPARTMENT - Planning and Coordinating Entity

A. Recommend policy for location of urbanization through General Plan.

B. Review, conduct public hearings and act on rezoning and subdivision proposals. Coordinate technical review by Public Works Agency, Health Care Service Agency, and Alameda County Flood Control and Water Conservation District.

C. Prepare EIR.

D. Provide population data for determining facility location and sizing.

II. LOCAL AGENCY FORMATION COMMISSION (LAFCO)

Review proposal and approve or deny proposed agency formation based on established policy

III. PUBLIC WORKS AGENCY - Technical, Operational and Maintenance Entity

A.* Staff for and review all proposals for discrete sewerage and other physical facilities.

B.* Study and develop proposals for existing discrete sewerage facilities improvements where HCSA indicates inadequacies and health problems.

C.* Define County Service Areas for service needs in consultation with LAFCO.

D. Administer and process CSA discrete sewerage facilities improvement funding requests to Federal, State, etc.

E.* Staff for operational and maintenance services for discrete facilities. May contract with other (public) agencies if more efficient.

F. Establish service charges and billing procedures.

G. Issue permits other than HCSA permits for use of individual discrete installations in consultation with HCSA and ACFC&WCD.

H.* Perform other technical measures as may be necessary.

*These duties may be contracted to consultants until such time that a sufficient number of systems are operated to justify a full-time County staff.

IV. HEALTH CARE SERVICES AGENCY (HCSA)

A. Regulation and enforcement of Federal, State and local health and environmental policies and standards.

B. Issue permits for use of individual septic tank installations in consultation with ACFC&WCD.

C. Monitor all discrete sewerage facilities which are not operated and/or maintained by Public Works Agency.

D. Establish inspection programs for all discrete sewerage facilities.

E. Review and recommend to approving agencies Discrete Sewerage Project plans and specifications.

F. Technical input to other County departments.

V. **ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (INCLUDING ZONE 7)**

A. Regulate and enforce Federal, State and Local water quality control policies and standards.

B. Review and recommend to approving agencies Discrete Sewerage Project plans and specifications.

APPENDIX E

FEDERAL COMMUNICATION COMMISSION MONITORING STATION PLANNING AND CONSTRUCTION STANDARDS

(2) A statement from a frequency coordinating committee recommending the frequency which, in the opinion of the committee, will result in the least amount of interference to all existing stations operating in the particular area. The Committee's recommendations may appropriately include comments on technical factors such as power, antenna height and gain, terrain, and other factors which may serve to mitigate any contemplated interference. The Committee shall not recommend any adjacent channel frequency 15 kHz removed to existing stations which would result in a separation of less than 10 miles. The frequency advisory committee must be so organized that it is representative of all persons who are eligible for radio facilities in the service concerned in the area the committee purports to serve. The functions of such committees are purely advisory in character, and their recommendations cannot be considered as binding upon either the applicant or the Commission, and must not contain statements which would imply that frequency advisory committees have any authority to grant or deny applications. If the frequency recommended is in the 150–170 MHz band, is 15 kHz removed from a frequency which is available to another radio service, and is assignable only after coordination, the committee's statement shall affirmatively show that coordination with a similar committee for the other service has been accomplished.

(b) For frequencies between 470 and 512 MHz:

(1) A report showing that the frequencies applied for are available for assignment in accordance with the applicable loading and separation standards, as specified in § 90.303 and §90.307, or;

(2) A statement from a frequency coordinating committee recommending specific frequencies which are available for assignment in accordance with the loading standards and mileage separations applicable to the specific radio service involved.

(c) Any recommendation submitted in accordance with Subparagraphs (a)(2) or (b)(2) of this section is purely advisory in character and is not binding on either the applicant or the Commission. The recommendation may not contain statements implying that anyone other than the Commission has the power to grant or deny applications. Applicants are advised not to purchase radio equipment on specific frequencies until a valid authorization has been obtained.

require coordination with the Canadian government.

(d) Applications for facilities near the Canadian border north of line A or east of line C in Alaska may See Section 1.955 of this chapter.

(e) The following applications need not be accompanied by evidence of frequency coordination:

(1) Applications in the Police, Highway Maintenance, or Forestry Conservation Radio Services from States requesting frequencies available only in accordance with a geographical assignment plan.

(2) Applications in the Special Emergency Radio Service, except as required by § 90.53(b)(8).

(3) Applications for a Federal Government frequency.

(4) Applications for a frequency allocated primarily for the operation of industrial, scientific, and medical (ISM) devices, (27 MHz band).

(5) Applications for a frequency in the 72–76 MHz band for operational fixed stations.

(6) Applications for a frequency in the band 216–220 MHz.

(7) Applications for a frequency below 25 MHz.

(8) Applications for a frequency above 512 MHz.

(9) Applications for a frequency allocated primarily for developmental operation.

(10) Applications in the Business Radio Service for a frequency below 450 MHz where both frequencies immediately adjacent (±20 or 30 kHz) are available for assignment in that service.

(11) Applications in the Special Industrial Radio Service or the Business Radio Service specifying an itinerant operation only.

(12) Application in the Radiolocation Radio Service.

[*§ 90.175 intro text amended eff. 9–2–80; V79)–2*]

§ 90.177 Protection of certain radio receiving locations.

This section pertains to applications for new or modified authorizations in the vicinity of the National Radio Astronomy Observatory, Green Bank, Pocahontas County, W. Va., the Naval Radio Research Observatory, Sugar Grove, Pendleton County, W. Va., or the Table Mountain Radio Receiving Zone, Boulder County, Colo.

(a) Any applicant for a new permanent base or fixed station, or for a modification of an existing authorization which would change the frequency, power, antenna height, directivity, or location within the boundaries described in paragraph (b) of this section shall notify the Director, National Radio Astronomy Observatory, P.O. Box 2, Green Bank, W. Va. 24944, in writing, of the technical parameters of the proposal.

(1) The notification shall be made prior to, or simultaneously with the filing of the application with the Commission.

(2) The notification shall state the geographical coordinates of the antenna, antenna height, antenna directivity, proposed frequency, type of emission, and effective radiated power.

(3) After receipt of such applications, the Commission will allow a period of 20 days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval

339-847 O - 81 - 4

Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(4) The provisions of this paragraph do not apply to applications for mobile, temporary base, or temporary fixed stations.

(b) The area of concern for the National Radio Astronomy Observatory or the Naval Radio Research Observatory is the area bounded by 39°15′ N. on the north, 78°30′ W. on the east, 37°30′ N. on the south, and 80°30′ W. on the west.

(c) Protection for Table Mountain Radio Receiving Zone, Boulder County, Colo. Applicants for a station authorization to operate in the vicinity of Boulder County, Colo., under this part are advised to give due consideration, prior to filing applications, to the need to protect the Table Mountain Radio Receiving Zone from harmful interference. These are the Research Laboratories of the Department of Commerce, Boulder County, Colo. To prevent degradation of the present ambient radio signal level at the site, the Department of Commerce seeks to insure that field strengths at 40°07′50″ N. Latitude, 105°14′40″ W. Longitude, resulting from new assignments (other than mobile stations) or from modification or relocation of existing facilities do not exceed the following values:

Frequency range	Field strength (millivolt per meter) in authorized bandwidth o service	Power flux density [1] (decibel w rt per square meter) in authorized bandwidth of
		service
Below 540 kHz	10	−65.8
540 to 1600 kHz	20	−59.8
1.6 to 470 MHz	10	−65.8
470 to 890 MHz	20	−59.2
Above 890 MHz	1	−85.8

[1] Equivalent values of power flux density are calculated assuming a free space characteristic impedance of 376.7 ≅ 120 ohms.

(1) Advance consultation is recommended particularly for those applicants who have no reliable data indicating whether the field strength or power flux density figures in the above table would be exceeded by their proposed radio facilities. In such instance, the following is a suggested guide for determining whether coordination is appropriate:

(i) All stations within 2.4 km (1.5 statute miles);

(ii) Stations within 4.8 km (3 statute miles) with 50 watts or more effective radiated power (ERP) in the primary plane of polarization in the azimuthal direction of the Table Mountain Radio Receiving Zone;

(iii) Stations within 16 km (10 statute miles) with 1 kW or more ERP in the primary plane of polarization in the azimuthal direction of Table Mountain Receiving Zone;

(iv) Stations within 80 km (50 statute miles) with 25 kW or more ERP in the primary plane of polarization in the azimuthal direction of Table Mountain Receiving Zone.

(2) Applicants concerned are urged to communicate with the Radio Frequency Management Coordinator, Department of Commerce, Research Support Services, NOAA/R5X3, Boulder Laboratories, Boulder, Colo. 80302; in advance of filing their applications with the Commission.

(3) The Commission will not screen applications to determine whether advance consultation has taken place. However, applicants are advised that such consultation can avoid objections from the Department of Commerce or proceedings to modify any authorization which, in fact, permits a signal at the reference point in excess of the field strength specified herein.

(d) Protection for Federal Communications Commission monitoring stations:

(1) Applicants in the vicinity of an FCC monitoring station for a radio station authorization to operate new transmitting facilities or changed transmitting facilities which would increase the field strength produced over the monitoring station over that previously authorized are adivsed to give consideration, prior to filing applications, to the possible need to protect the FCC stations from harmful interference. Geographical coordinates of the facilities which require protection are listed in Section 0.121(c) of the Commission's Rules. Applications for stations (except mobile stations) which will produce on any frequency a direct wave fundamental field strength of *greater than 10 mV/m* in the authorized bandwidth of service (−65.8 dBW/m^2 power flux density assuming a free space characteristic impedance of 120 ohms) at the referenced coordinates, may be examined to determine extent of possible interference. Depending on the theoretical field strength value and existing root-sum-square or other ambient radio field signal levels at the indicated coordinates, a clause protecting the monitoring station may be added to the station authorization.

(2) In the event that calculated value of expected field exceeds 10 mV/m (−65.8 dBW/m^2) at the reference coordinates, or if there is any question whether field strength levels might exceed the threshold value, advance consulation with the FCC to discuss any protection necessary should be considered. Prospective applicants may communicate with:

Chief, Field Operations Bureau
Federal Communications Commission
Washington, D.C. 20554
Telephone (202) 632–6980

(3) Advance consultation is suggested particularly for those applicants who have no reliable data which indicates whether the field strength or power flux density figure indicated would be exceeded by their proposed radio facilities (except mobile stations). In

such instances, the following is a suggested guide for determining whether an applicant should coordinate:

(i) All stations within 2.4 kilometers (1.5 statute miles);

(ii) Stations within 4.8 kilometers (3 statute miles) with 50 watts or more average effective radiated power (ERP) in the primary plane of polarization in the azimuthal direction of the Monitoring Station;

(iii) Stations within 16 kilometers (10 statute miles) with 1 kW or more average ERP in the primary plane of polarization in the azimuthal direction of the Monitoring Station;

(iv) Stations within 80 kilometers (50 statute miles) with 25 kW or more average ERP in the primary plane of polarization in the azimuthal direction of the Monitoring Stations.

(4) Advance coordination for stations operating above 1000 MHz is recommended only where the proposed station is in the vicinity of a monitoring station designated as a satellite monitoring facility in Section 0.121(c) of the Commission's Rules and also meets the criteria outlined in paragraphs (2) and (3) above.

(5) The Commission will not screen applications to determine whether advance consultation has taken place. However, applicants are advised that such consultation can avoid objections from the Federal Communications Commission or modification of any authorization which will cause harmful interference.

[§ 90.177(d) *added eff. 1-31-80; V(79)-2*]

§ 90.179 Cooperative use of Public Safety and Special Emergency Land Mobile Radio Stations.

Arrangements may be made between two or more persons for the cooperative use of radio station facilities in the Public Safety and Special Emergency Radio Services provided all persons sharing in the use of a station are eligible to hold licenses to operate the particular type of station shared. Such arrangements shall be governed by the following:

(a) *Agreements relating to control.* (1) A group of persons eligible for a license in the same radio service may share the use of a base station or a base and mobile station licensed to one member of the group provided there is on file with the Commission, and maintained with the records of the station, a copy of the agreement under which such shared operation shall take place. Such agreement should provide that the licensee of the station shall be in control of the operation of the station and that all use of its facilities shall take place only under the direction and supervision of an employee of the licensee.

(2) Subscribers to such service may either obtain a separate license to cover the mobile transmitters which they use or the mobile transmitters may be included in the license of the base station from which service is rendered. In the latter case the coordinated service agreement should specifically cover use of such mobile units and indicate that the licensee would be in control of such units.

(b) *Contributions to operating costs.* Coordinated service may be rendered without cost to subscribers or contributions to capital and operating expenses may be accepted by the licensee. Such contributions must be on a cost-sharing basis and pro-rated on an equitable basis among all persons who are parties to the cooperative arrangement. Records which reflect the cost of the service and its nonprofit, cost-sharing nature shall be maintained by the base station licensee and held available for inspection by a Commission representative.

(c) *Letter to accompany application.* Each application for a mobile station proposing to receive coordinated service shall be accompanied by a letter from the licensee of the base station concerned indicating that the proposed coordinated service will be rendered.

§ 90.181 Cooperative use of industrial and radiolocation land mobile radio stations.

(a) Arrangements may be made between two or more persons for the cooperative use of radio station facilities, provided that all such persons are eligible in the same radio service. When two or more persons want to share use of a base station licensed to only one of those persons, arrangements may be made in either of the following two ways:

(1) A person who is to receive service from a base station licensed to a person other than himself may obtain a license for his own mobile radio units. The application for such license shall be accompanied by an application from the licensee of the base station for modification of his license to permit rendition of the desired service. The application for modification of the base station license shall name the person to be served and may be filed either on FCC form 400 or by letter, in duplicate; or

(2) A person who is to furnish base station service to mobile radio units installed in vehicles owned and operated by persons other than himself may, if he desires, be licensee of these mobile radio units. Each person owning and operating such mobile radio units shall enter into a written agreement giving the licensee thereof the sole right of control over such units, and that agreement shall be kept as a part of the records of the base station. The operator of each vehicle shall operate the radio units subject to the orders and instructions of the base station operator. The licensee shall at all times have such access to, and control of the mobile radio equipment as will enable him to discharge his responsibilities under the Communications Act.

(b) A base station licensee who enters into a cooperative arrangement, in accordance with the pro-

Part 28 - PLANNING AND CONSTRUCTION OF MONITORING STATIONS

28.10 Selection of Monitoring Station Sites - General Information

Satisfactory operation of a monitoring station equipped with a long range direction finder depends to a great extent upon the characteristics of the site and upon freedom from local sources of interference. Ideal sites cannot always be found in areas where it is desired to establish a monitoring station and it may at times be necessary to compromise between desirable minimum site standards and the necessity for location in a particular area. The following standards should be used as a guide in selection of a site:

(a) The site should consist of level terrain situated in a relatively level area.

(b) There must be no mountains, hills, large structures or other obstructions projecting to a vertical angle of more than three degrees above the horizontal as viewed from the proposed long range direction finder location. There should be no valleys or other major depressions within one mile of the center of the site.

(c) Soil with high electrical conductivity is desirable. Soil suitable for agriculture or with high alkaline content is to be preferred but clay soil is acceptable. Sandy soil may require special precautions to obtain satisfactory operation of a long range direction finder. Gravel or rocky soil or areas with extensive outcroppings of rock should be avoided.

(d) There should be no lakes or other large bodies or water within one mile of the center of the plot. Small ponds, creeks or intermittent streams on the property may eliminate a site from consideration depending upon their location and dimensions.

(e) The site should be at least one mile from any existing or potential industrial or congested residential districts.

(f) The site should be accessible by all-weather road, and facilities such as commercial electric power, telephone

service and water should be available or obtainable. There should be adequate available housing and shopping facilities for personnel within 10 miles or less of the site.

(g) There should be no fixed or continously operating (e.g., broadcast) radio transmitters close enough to the monitoring station to produce on any monitored frequency, a fundamental electric field strength of more than 10 mV/m. The fewer transmitters producing fields greater than one millivolt per meter, the better for the monitoring station. A site with a lowest combined root-sum-square value should be sought for mimimum interference to the monitoring station.

28.11 Land Requirements

The area of land required depends upon a number of factors. For example, stations which will act as radio net control or relay centers will normally require more space for antennas than a station which does not have these functions. If extensive long distance monitoring is required of the station, more space will be required for directional antennas than at a station where long range direction finding is the prime responsibility. Stations which engage in signal field strength recording will require additional land to provide for adequate clearance from overhead conductors and other obstructions for the recording antennas.

The use made of adjacent property is also an important factor. For instance, where a monitoring station is to be situated in a farming or livestock-raising area, there is less likelihood of interference to the operations than in an area where factories or similar potential interference sources are in existence or contemplated. To avoid possible deterioration of a monitoring site due to erection of interference sources in close proximity to the direction finder or antennas, it is often required to obtain additional land to provide necessary isolation from such sources. The indicated minimum requirements listed below are for locations where adequate protection from potential noise sources is afforded by agricultural or unused land. (The higher figures will provide added protection for the station):

(a) Long range direction finding station with only nominal monitoring and other duties, 40 acres minimum. (80 acres desirable).

(b) Typical monitoring station with long range direction finder, a limited number of directional monitoring antennas and with radio communication facilities, 80 acres minimum. (160 acres desirable).

(c) Typical monitoring station with several directional monitoring antennas and field strength recording facilities but without radio net control or relay duties. Minimum, 120 acres. (240 acres desirable).

(d) Monitoring station as in (c) above except with radio net control or relay duties, 160 acres minimum. (320 acres desirable).

28.12 Buildings

The number and size of the buildings required will depend upon the staff to be accommodated and upon various special activities to be undertaken.

(a) Monitoring and office building

(1) Monitoring station with staff of not more than six, 800 to 1,000 square feet.

(2) Monitoring station with staff of not to exceed 15 to 20, 1,600 to 2,000 square feet.

(3) Monitoring station with staff of 20 to 40, 2,400 square feet or more.

(b) Garage or carport

Allowance should be made for a minimum of 2 vehicles, giving consideration to overhead clearance for trucks.

Covered storage should be provided for all vehicles to be operated by station staff.

(c) Emergency power plant shelter

All stations would be provided with an engine-driven alternator to provide emergency ac power during periods when commercial power is not available. For small stations, at least a 25 kW plant should be provided, if electric heating or air conditioning is installed and depending on ambient temperature extremes, while large staions will need 30 to 50 kW plants.

From 80 to 200 square feet of floor space in a fire-resistant or fireproof building should be provided for the emergency power plant. This area may be in the garage or transmitter building or in a separate building.

(d) Transmitter building

Where the power output of the communication transmitters is on the order of 200 watts or less, the transmitters may be installed in the monitoring building. For higher powers, it is preferable to install the transmitters in a separate building. For transmitter powers exceeding 1 kW, the transmitters and associated antennas should be at least 1,000 feet from the monitoring building, direction finder and receiving antennas; at stations where the transmitters are in regular use (e.g., where radio is the primary means of communication, or at net-control stations), 2,000 feet or more clearance is desirable. The size of the transmitter building will depend upon the size and number of transmitters to be installed. To provide adequate space for for personnel to move about in performing maintenance, 120 square feet of floor space is the usual minimum requirement. Monitoring stations with radio net-control or relay duties may require from 400 to 800 square feet of floor space.

(e) Field strength recording booths

A minimum of 30 square feet should be provided for one recorder, with an additional 10 square feet for each added recorder.

(f) Storage space

Space should be provided in the monitoring building, garage, transmitter building, or in a separate building for storage of spare equipment, cable and supplies. Stations which have depot responsibilities will require additional space for depot stock materials. A minimum of 160 square feet of storage space with adequate protection against excess moisture should be provided for small stations. Larger stations may require from 300 to 600 square feet of enclosed storage space with additional space as required for cable and other bulky items. It may be more convenient to store large reels of electrical cable in open sheds rather than in buildings.

28.13 Commercial power facilities

Except for very small stations with limited power requirements, and depending on the type of environmental control (heating, air conditioning, etc.), the mimimum required power service capability would be single phase, 3 wire 110/220 volts at 25 kW. For larger stations, particularly those with radio net-control or relay duites, 3 phase power with a capacity of 30 to 50 kW shuold be provided, depending on transmitter requirements. Where transmitters with power outputs in excess of 1 kW are to be installed, 3 phase power is essential.

28.14 Location of long range direction finder

In planning a monitoring station, first consideration must be given to the location of the long range direction finder. After the direction finder site has been determined, the various buildings, antennas and other structures are then appropriately located to provide the necessary clearance from the direction finder. Desirable minimum clearance standards for the long range direction finder (measured from the edge of the direction finder array) are as follows:

(a) All overhead conductors or man-made structures regardless of height, 250 feet (except as indicated in (b) below).

(b) Metallic fences, 250 feet. Wooden fences designed to protect the direction finder from livestock or other intrusion may be erected not less than 25 feet from the direction finder elements if they are symmetrically constructed with respect to the direction finder. A circular fence co-axial with the direction finder would satisfy this requirement. Five hundred feet is the minimum clearance required for a fence with vertical, metallic components.

(c) Overhead conductors or man-made structures exceeding 50 feet in height, 750 feet.

(d) Buried metal pipes or electrical cables (other than direction finder control cables) 250 feet is a desirable minimum; closer spacing may be acceptable depending on dimensions, route with respect to the direction finder, and depth of burial.

(e) Irrigation and drainage ditches, ponds, small creeks and intermittent streams, preferably 1,000 feet or more. Somewhat closer distance may be permissible in case of a very small ditch or stream. Ponds may often be eliminated by providing a drainage outlet.

(f) Monitoring building, garage, and other major structures, 600 feet minimum. (Greater distance desirable)

(g) Obstructions, including man-made structures or natural terrain features, maximum elevation (as viewed from ground level at center of direction finder) shall not exceed in height the horizontal distance to the obstruction multiplied by 0.052 (3 degree vertical angle).

(h) Maximum terrain deviation from the ground elevation at the direction finder should not exceed 5 feet within 500 feet of the direction finder. In the case of wide aperture direction finders, precise grading within the aray circle is required.

(i) Any single quarter wave ($\lambda/4$) structure, resonant at any frequency within the operating frequency range of the direction finder should be removed at least 7 wavelengths.

(j) Any single half wave ($\lambda/2$) structure, resonant at any frequency within the operating frequency range of the direction finder should be removed at least 15 wavelengths.

NOTE: When more than one of the quarter wave or half wave structures, referred to in (i) and (j) above, are noted at any reasonable distance from the direction finder, a special study may be required. In such case, refer the facts to Headquarters.

28.15 Location of Monitoring Building with Respect to Direction Finder

As indicated above, the monitoring building should be at least 600 feet and preferably somewhat further from the edge of the long range direction finder. On the other hand, direction finders should not be located at too great a distance from the monitoring building because of cable losses and the added expense for cables and cable ditching. The optimum distance, taking into account adequate clearances and economics is about 1,000 feet. However, distances up to 2,000 feet are acceptable.

Appendix F

LAFC Resolution No. 81-43

Deputy County Counsel

LOCAL AGENCY FORMATION COMMISSION OF ALAMEDA COUNTY

RESOLUTION NO. 81-43

WHEREAS, Resolution No. 79-30 provides for a sphere of influence for the City of Livermore; and

WHEREAS, Section 54774 of the Government Code, State of California mandates this Commission to develop and determine a sphere of influence for each local governmental agency within the County; and

WHEREAS, Section 54774 of the Government Code further mandates this Commission to review and update its spheres of influence on a periodic basis as deemed necessary; and

WHEREAS, after its initial study it was determined that the revision of boundaries of the sphere of influence will have no impact on the environment since the sphere is a broad policy consideration and not a discrete project with isolatable and identifiable effects. It is also found that the effects which do occur will result in urbanization within the sphere and not the sphere itself. Such urbanization will be the result of action taken by local agencies other than this Commission in making the general plan and zoning determination.

WHEREAS, the Commission received oral and written testimony from all persons desiring to speak at its meeting of August 20, 1981 at its regular meeting place, the Auditorium of the Public Works Building, 399 Elmhurst Street, Hayward, California.

WHEREAS, the Commission after review of the staff report and presentation of testimony makes the following findings:

1. Areas south of Freeway 580 be limited to those developments that are within the sphere of influence and can be served by the City of Livermore.

2. Areas north of Freeway 580 and outside of the Livermore sphere of influence should be designated as unincorporated preserves and should be subject to review by the Commission, pursuant to its policies, guidelines, procedures and criteria.

FINDINGS: The findings are based on the following:

a. The maximum possible service area for the City of Livermore, based upon the present decision by the city of limiting growth can be projected within the proposed sphere of influence of the city.

b. Although the city may have the infrastructure to provide certain services to the areas north of the freeway, present policies of the city indicate that they may not be willing to provide services to allow the project growth in the area.

c. The city's policy limits growth to a two percent annual rate. This growth can be accommodated within the Livermore Sphere of Influence. Future populations projected for the area beyond the two percent growth limit can be accommodated in the area north of the freeway, designated at this time as unincorporated preserve.

d. Development of the area north of Freeway 580 between Doolan Road and Collier Canyon Road is planned for residential development in accordance with the County's General Plan. The area immediately north of I 580 now zoned as agricultural by the County and open space by the city is being projected for a future total development providing a wide range of residential commercial uses. These developments will be subject to review by the Commission, pursuant to its policies, guidelines and procedures. The extension of the Livermore sphere to the east of Greenville Road anticipates the future development of that area for industrial purposes.

e. The areas within the sphere of influence of the city will receive their service needs from the City of Livermore. The areas north of I-580 will require the provision of future service requirements by other governmental agencies, assuring that adequate services will be provided to any future developments.

f. The City of Livermore is presently providing services to most of the areas within their sphere of influence or have plans to extend their services to the areas upon incorporation in the city. Governmental agencies and financing vehicles will be established to provide services in the areas outside of the sphere of influence. The level range and adequacy of services will be the responsibility of the County and the creation of governmental units must be subject to review of the Commission.

g. Any developments in the unincorporated preserve will be required to show an economic independence for most services. Certain governmental agencies will provide services to any new developments as well as the existing city. Both areas will be served by the Livermore Area Recretion and Park District and the Livermore Unified School District which have coterminous boundaries and serve an area much larger than the City of Livermore and any possible developments outside the city.

h. The City of Livermore has granted agricultural preserve status to certain properties within its city and the area primarily south of the city is also in agricultural preserve and will probably remain so. A large part of the area outside of the sphere and north of I 580 is now included in agricultural preserve and the question of removing these areas from any sphere would be a consideration that the Commission would consider in allowing the provision of services by other governmental agencies in the area for development. Such considerations would be in accordance with the Commission's policy and guidelines.

NOW, THEREFORE, BE IT RESOLVED, DETERMINED AND ORDERED:

That the sphere of influence of the City of Livermore be established as of the date shown on the attached map and made an exhibit hereto.

I CERTIFY THAT THE FOREGOING IS A CORRECT COPY OF A RESOLUTION ADOPTED BY THE LOCAL AGENCY FORMATION COMMISSION OF ALAMEDA COUNTY, CALIFORNIA 11/19/81

ATTEST 11-23-81

ROLAND MAYNE, Executive Officer

Appendix G

BIBLIOGRAPHY

BIBLIOGRAPHY

Alameda County, Alameda County General Plan

Open Space Element	May 1973
Noise Element	Sept. 1975
Seismic Safety Element	Jan. 1976
Conservation Element	Nov. 1976
Housing	Aug. 1976
Safety	Sept. 1975
Parks & Recreation	Nov. 1968
Scenic Route Element	May 1966
Livermore-Amador Valley Planning Unit	Nov. 1977

Alameda County Flood Control and Water Conservation District, Zone 7, Groundwater Contours, Map of Livermore and Southern San Ramon Valley (1978).

_____, Maps Showing Aerial Distribution of TDS and Nitrates in Groundwater (1978).

_____, Groundwater Level Contours for Spring 1980 (1980).

_____, Well Location Maps (1980).

_____, Analyses of Groundwater - Major Ion (data sheet for certain wells) (1981).

_____, Display of Well Data, Groundwater Quality Monitoring (TDS, Nitrates and Sodium) (1981).

_____, Hydrologic Data on Well Location Maps (1981).

Alameda County Planning Department, Draft - Environmental Impact Report, Northbluff, Broadmoor Development Company, Livermore Area, Alameda County Planning Department, 121p. plus Appendices (1979).

_____, Livermore-Amador Valley Planning Unit, Plan Amendment Consideration and EIR (1976).

_____, Northbluff Draft EIR (1981).

_____, Population Projections

Alameda County Department of Public Works, Index of County Maintained Roads (1981).

Alt, J.N., "Analysis of Repeated Geodetic Leveling Data for the Livermore Valley Area, Alameda County, California," in Abstracts with Programs (Cordileran Section of the Geological Society of America, 75th Annual Meeting, San Jose, California), pp 65-66 (1979).

_____, Analysis of Repeated Geodetic Leveling Data across the Calaveras and Greenville Faults.

Association of Bay Area Governments, Annual Planning Information, 1981-82, May 1981.

_____, Housing Needs Report, December 1981.

_____, Issue Paper #4 - Growth Policies Program, 1973.

_____, Projections '79, January 1980.

_____(ABAG), Regional Airport Plan, Update Program, Phase 2 (1980).

_____, Regional Plan 1980, July 1980.

_____, et al, San Francisco Bay Area Annual Air Quality Report for 1980, San Francisco, California 1981.

_____, San Francisco Bay Area Economic Profile, 1980.

Bailey, A.D., "Near Surface Fault Detection by Magnetometer," in California Geology, pp. 274-277, December 1974.

Bailey, E.H. H.R. Irwin, and D.L. Jones, Franciscan and Related Rocks and Their Significance in the Geology of Western California, California Division of Mines and Geology, Bulletin 83, 1964.

_____, M.C. Blake, Jr., and D.L. Jones, "Character and Significance of the Ophiolitic Crust that Forms the Basis of the Great Valley Sequence in Western California," in Geology Society of America, Abstracts with Programs (Cordileran Section), 2(2), No. 2. pp. 68-69 (1970).

Baker, J.B., "Application and Evaluation of Reconnaissance Techniques for Investigation of Potential Geologic Hazards," M.S. research report, Stanford University (1976).

BART Board of Directors, Policy Statement on BART Extensions (1980).

Bay Area Air Quality Managment District, Guidelines for Air Quality Impact Analysis of Projects (with revisions), San Francisco, California (1975).

Bay Area Council, Housing: the Bay Area's Challenge of the '80's, (December 1980).

Bay Area Transportation Study Commission, Projections 1968-69.

Bedrossian, T.L., Besore, S.P. Sherburne, R.W., and Woofton, T.M., "The Livermore Earthquakes of January 1980 Contra Costa and Alameda Counties, California", in California Geology, v. 33, n. 4, pp. 88-92 (1980).

Benson, Paul, CALINE 3 - A Versatile Dispersion Model for Predicting Air Pollutant Levels Near Highways and Arterial Streets, California Department of Transportation, Sacramento, California (1979).

Blake, M.C., Jr., and D.L. Jones, "Origin of Franciscan Melanges in Northern California," in Modern and Ancient Geosynclinal Sedimentation, Dott, R.H., Jr., and Shjaver, R.H., Eds., Society of Econ. Paleontologists and Mineralogists, Spec. Pub. 19, pp. 345-357 (1974).

Blume, John A. & Associates, Inc., Investigation of Faulting at the Lawrence Livermore Laboratory, consultant report to University of California, Lawrence Livermore National Laboratory by John A. Blume & Associates, Inc., San Francisco, California, 55 p. (1972).

Bolt, B.A., McEvilly, T.V., and Uhrhammer, R.A., "The Greenville, California earthquake sequence of January, 1980": in Earthquake Engineering Research Institute Newsletter, v. 14, n. 2, 23-33 p., (1980).

_____, "The Livermore Valley, California, earthquake sequence of January, 1980", in Bulletin of the Seismological Society of America, v. 71, no. 2, pp. 451-463 (1980).

Bonilla, M.G., Historic surface faulting - Map patterns, relation to subsurface faulting, and relation to preexisting faults: U.S. Geological Survey Open-file Report 79-1230, pp. 36-65 (1979).

_____, J.J. Lienkaemper, and J.C. Tinsley, Surface Faulting Near Livermore, California Associated with the January, 1980 Earthquakes, U.S. Geological Survey, Open-file Report 80-523, 27p., map scale 1:24,000 (1980).

Borcherdt, R.D., Studies for seismic zonation of the San Francisco Bay Region - Basis for reduction of earthquake hazards, San Francisco Bay Region, California: U.S. Geological Survey Professional Paper 941-A, 102 p. (1975).

Brabb, E.E. Sonneman, H.S., and Switzer, J.R., Jr., Preliminary geologic map of the Mt. Diablo-Byron area, Contra Costa, Alameda and San Joaquin Counties, California: U.S. Geological Survey, Basic Data Contribution 28, map scale 1:62,500 (1971).

_____, Pampeyan, E.H., and Bonilla, M.G., Landslide susceptibility in San Mateo County, California: U.S. Geologic Survey Misc. Field Studies Map MF-360 Basic Data Contribution 43, scale 1:62,500 (1972).

Breiner, S., Applications Manual for Portable Magnetometers, Geometrics, 395 Java Drive, Sunnyvale, California, 58 p. (1973).

Brown and Caldwell, Projections for Zone 7 of Alameda County Flood Control and Water District (1972).

Brown, R.D., Faults that are Historically Active or that Show Evidence of Geologically Young Surface Displacement, San Francisco Bay Region, U.S. Geological Survey Misc. Field Studies Map, MF-331, scale 1:250,000 (1970).

_____, W.H.K. Lee, Active Faults and Preliminary Earthquake Epicenters in the Southern Part of the San Francisco Bay Region 1969-1970, U.S. Geological Survey Basic Data Contribution 30 (1971).

California Department of Employment Development, Population Forecasts (1982).

California State Department of Finance, Population Research Unit, Misc. Population Data (1982).

California Fish and Wildlife Service, 50 CRF 17: Endangered Species and Threatened Wildlife and Plants, (April, 1981).

California Department of Transportation, (Caltrans), Progress Reports on Trip Ends Generation Research Counts, 1975-1981 (1981).

_____, 1980 Ramp Volumes on the California State Freeway System, (1981).

_____, 1980 California State Highway Log (1981).

_____, Traffic Volumes on California State Highways, (1979-1981).

California Department of Water Resources (Hansen, W.R.): Livermore and Sunol Valleys, Evaluation of Ground Water Resources, Appendix A: Geology, Bulletin 118-2, State of California, Department of Water Resources, 92 p. (1966).

_____, (Ford, R.S., and Hills, E.E.): Evaluation of G11 und Water Resources: Livermore and Sunol Valleys, Bulletin 118-2, Geology, 153 p. (1974).

_____, Marlette, J.W., Preliminary Report, Faults and Seismicity at Las Vaqueros Dam Site, 47 p. (1978).

_____, Marlette, J.W., Re-evaluation of Seismic Hazards of Clifton Court Forebay, Bethany Dams and Reservoir, Patterson Reservoir, Del Valle Dam and Lake Del Valle, 77 p. (1979).

California Native Plant Society, Inventory of Rare and Endangered Vascular Plans of California, (April 1980).

California Regional Water Quality Control Board, Policy on Discrete Sewerage Facilities, Resolution No. 78-14.

_____, Water Quality Control Plan Report, San Francisco Bay Basin (2), (April, 1975).

Camp, Dressler & McKee, Draft Interim Report for Public Comment, Wastewater Management Study for the Unsewered, Unincorporated Area of Alameda Creek Watershed Above Niles, for Alameda County Flood Control and Water Conservation District - Zone 7 (September, 1981).

_____, Draft Technical Supplement, Interim Report, Wastewater Management Study for the Unsewered, Unincorporated Area of Alameda Creek Watershed Above Niles, for Alameda County Flood Control and Water Conservation District - Zone 7, November, 1981.

_____, Addendum to Draft Interim Report, Wastewater Management Study for the Unsewered, Unincorporated Area of Alameda Creek Watershed Above Niles, for Alameda County Flood Control and Water Conservation District - Zone 7 (November, 1981).

Carpenter, D.W., K.P. Puchlik, A.L. Ramirez, J.L. Wagoner, K.G. Knauss and P.W. Kasameyer, Status Report on the Geology of the Lawrence Livermore National Laboratory Site and Adjacent Areas, Vol. I, Lawrence Livermore National Laboratory, Livermore, California, UCRL 53065, 97 p. (1980).

_____, Geologic Studies for Seismic Hazard Assessment, Las Positas Fault Zone.

John Carollo Engineers, Livermore-Amador Valley Water Management Agency Project Report, for LAVWMA (July, 1976).

Chapman, Roger, H. and Chase, Gordon, "Magnetic Anomalies and Active Faults in the San Fernando Area," Chapter 17 in San Fernando, California, Earthquake of 9 February 1971, Bulletin 196, California Division of Mines and Geology, pp. 213-225 (1975).

_____, "Black-Box Geology", Uses and Misuses of Geophysics in Engineering Geology, in California Geology, January, California Division of Mines and Geology, pp. 8-12 (1976).

Clark, B.L., "Tectonics of the Coast Ranges of Middle California", Geol. So. America Bull., v. 41, pp. 747-828 (1930).

_____, Tectonics of the Mount Diablo and Coalings areas, middle Coast Ranges of California: Geol. Soc. America Bull., v. 46, pp. 1025-1078 (1935).

_____, "Notes on California Tertiary correlation," in Geologic formations and economic development of the oil and gas fields of California: California State Div. Mines Bull., 118 pp. 187-191 (1943).

Cockerham, R.S., F.W. Lester, and W.L. Ellsworth, A Preliminary Report on the Livermore Valley Earthquake Sequence, January 24 - February 26, 1980. U.S. Geological Survey, Open-File Report 80-714, 45 p., 9 figures (1980).

Colburn, I.P., The tectonic history of Mount Diablo, California: Stanford University PhD thesis, 234 p. (1961).

_____, The Mesozoic stratigraphy in the vicinity of Mount Diablo, in Guidebook to the Mount Diablo field trip: Geologic Society of Sacramento, pp. 9-22, map scale 1:48,000 (1964).

Coldwell Banker, San Francisco '81: A Coldwell Banker Real Estate Overview for Business, (January 1981).

Collinson, D.W., "Origin of Remnant Magnetization and Initial Susceptibility of Certain Red Sandstones," Geophysics Journal 9, pp. 203-217 (1964).

_____, "The Remnant of Magnetization and Magnetic Properties of Red Sediments", Geophysics Journal 10, pp. 105-126 (1965).

Comfort Associates, Contra Costa on the Move, (August, 1981).

Contra Costa County, San Ramon Valley Area General Plan, (March 1976).

Contra Costa County Development Association, Finger Tip Facts on Contra Costa County, (March 1980).

Contra Costa Times, miscellaneous newspaper articles (1981 and 1982).

Cooper-Clark & Associates, Inc., Geotechical Services, Livermore Properties, Las Positas Valley, California, Consultant report to Wilsey & Ham, Inc., by Cooper-Clark and Associates, 21 p. (1973)

_____, Technical Report Geotechnical Investigation in City of San Jose's Sphere of Influence for the City of San Jose (1974).

Glasson, W.A., Effect of Hydrocarbon and NOx on Photochemical Smog Formation Under Simulated Conditions, Journal of the Air Pollution Control Association, 31 (1169), (1981).

Gruen Gruen + Associates, The Jobs/Housing Balance in the City of Pleasanton, (December, 1981).

Hackman, R.J., "Time, Shadows, Terrain and Photo-Interpretation", U.S. Geological Survey, Prof. Paper 575B, B155-B160 (1967).

Hall, C.A., Jr., Geology and Paleontology of the Pleasanton Area, Alameda and Contra Costa Counties, California: University of California Publication, Geologic Science Bulletin, Vol. 34, No. 1, 63p, map scale 1:62,500 (1958).

_____, Geology and Paleontology of the Pleasanton Area, Alameda and Contra Costa Counties, California: University of California Publication, Geological Science Bulletin, Vol. 34, No. 1, 89p, (1958).

Haltenhoff, F.W., "The San Ramon Valley Fault, California" and "The 1861 Surface Break of the Calaveras Fault, San Ramon, California: in Recent Deformation along the Hayward, Calaveras and Other Fault Zones, Eastern San Francisco Bay Region, California, F.W. Haltenhoff, Ed. (Geological Society of America, 75th Cordileran Section Meeting, San Joes, California) 61p. (1979).

Hanna, Steven R., A Simple Method for Calculating Dispersion from Urban Area Sources, Journal of the Air Pollution Control Association, 21 (774), (1971).

Hanna, W.F., and Brabb, E.E., Maps showing aeromagnetic anomalies, faults, earthquake epicenters, and igneous and volcanic rocks in the southern San Francisco Bay Region, California: U.S. Geological Survey Open-Field Report 79-827, 12p., 5 sheets, map scale 1:125,000 (1979).

Halt, Earl, "Guidelines for Evaluating the Hazard of Surface Fault Rupture", California Division of Mines and Geology, Note No. 49 (1975).

_____, Fault rupture hazard zones in California: California Division of Mines and Geology Special Publication 42, 25p. (1980).

_____, Bedrossian, B., and Ridley, A., Greenville fault, east of Livermore Valley: California Division of Mines and Geology, unpublished field trip guide, (April 12, 1980).

_____, Greenville fault, Alameda, Contra Costa and Santa Clara Counties, California: California Division of Mines and Geology, Fault Evaluating Report FER-117, 27p., 6 maps, scale 1:24,000 (unpublished report on file in San Francisco District) (1981).

_____, Recently Active Strands of the Greenville Fault, Alameda, Contra Costa and Santa Clara Counties, California, CDMG Open File Report 81-8SF, map scale 1:24,000 (1981).

Heirtzler, J.R., Peter, G., Talwani, M., & Zurflueh, E.G., "Magnetic Anomalies Caused by Two-Dimensional Structure: Their Computation by Digital Computer and their Interpretation:, Columbia University, Lamont Geological Observatory, Technical Report No. 6 CU-6-62, Contract No. 266(48) (1962).

Cotton, W.R., Preliminary geologic map of the Franciscan Rocks in the central part of the Diablo Range, Santa Clara and Alameda Counties, California: U.S. Geological Survey, Miscellaneous Field Study MF-343, Basic Data Contribution 39, map scale 1:62,500 (1972).

The Deane Organization, Feasibility Study "Northbluff Property Amador/Livermore Valleys", (February 1980).

_____, Land Planning and Architectural Criteria "Northbluff Property Amador/Livermore Valleys", (February 1980).

Dibblee, T.W. Jr., Preliminary Geologic Map of the Tassajara quadrangle, Alameda and Contra Costa Counties, California: U.S. Geological Survey Open-File Map 80-544 (1980a)

_____, Preliminary Geologic Map of the Byron Hot Springs quadrangle, Alameda and Contra Costa Counties, California: U.S. Geological Survey Open-File Report 80-534 (1980b).

_____, Preliminary Geologic Map of the Altamont quadrangle, Alameda County, California: U.S. Geologic Survey Open-File Report 80-538 (1980c).

_____, Preliminary Geologic Map of the Livermore quadrangle, Alameda and Contra Costa Counties, California, U.S. Geological Survey Open-File Report 80-533B (1980d).

_____, R.L. Darrow, "Guidebook to the Regional Geology of the East Bay Hills and the Northern Diablo Range - Livermore Valley Area" in V. Frizzell (ed.), Geology of the Central and Northern Diablo Range, California, Field Trip Guide for Annual Meeting Pacific Section Society of Economic Paleontologists and Mineralogists, pp. 65-112 (1981).

East Bay Regional Park District, Master Plan - 1980 (1979).

Ellsworth, and S.M. Marks, Seismicity of the Livermore Valley, California Region, 1969-1979, U.S. Geological Survey, Open-File Report 80-515 42p. (1980).

Ellsworth, W.L., Seismicity and Active Faults in the Eastern San Francisco Bay Area.

Emerson, D.O., Lawrence Livermore National Laboratory Site Seismic Safety Program.

Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42 (with revisions), Washington, D.C. (1973).

Frame, P.A., Landslides in the Mt. Sizer area, Santa Clara County, California: California State University at San Jose, M.S. thesis, 87p. (1974).

Geometrics, Portable Proton Magnetometer Model G-816, Marketing Bulletin (1974).

_____, Airborne Geophysics Division, Geophysical Exploration, Marketing Bulletin.

Gibson, W.M., and H.A. Wollenberg, "Investigations for Ground Stability in the Vicinity of the Calaveras Fault, Livermore and Amador Valleys, Alameda County, California", Geol. Soc. of Amer. Bull., 79, pp. 627-638 (1968).

Helley, E.J., Lajoie, K.R., and Burke, D.B., Geologic Map of Late Cenozoic Deposits, Alameda County, California, U.S. Geological Survey, Miscellaneous Field Studies Map, MF-429, Basic Data Contribution 48, Scale 1:62,500 (1972).

_____, Flatland Deposits of the San Francisco Bay Region, California - their geology and engineering properties, and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 88p. map scale 1:125,000 (1979).

Hem, John D., "Chemical Factors that Influence the Availability of Iron and Manganese in Aqueous Systems", in Geologic Society of America Bulletin, Vol. 83, pp. 443-450 (1972).

The Herald, miscellaneous newspaper articles (1981 and 1982).

Herd, D.G., Geologic Map of the Las Positas, Greenville and Verona Faults, Eastern Alameda County, California, U.S. Geological Survey, Menlo Park, California, Open-File Report 77-689, 25p., map scale 1:24,000 (1977).

_____, and Brabb, E.E., Faults at the General Electric Test Reactor Site, Vallecitos Nuclear Center, Plesanton, California: A Summary Review of Their Geometry, Age of Las Movement, Recurrence, Origin and Tectonic Setting and the Age of the Livermore Gravels, U.S. Geological Survey, Menlo Park, California, Administrative Report, 77p. (1980).

Highway Research Board, Highway Capacity Manual (1965).

Holzer, T.L., Documentation of potential for surface faulting related to groundwater withdrawal in Las Vegas Valley, Nevada, U.S. Geological Survey Open-File 78-79. 21p., 8 figs. (1978a).

_____, Results and interpretation of exploratory drilling near the Picacho fault, south-central Arizona, U.S. Geological Survey Open-File Report 78-1016., 41p., 3pls., 13 figs. (1978a).

_____, and Pampeyan, E.H., Earth fissures and localized differential subsidence, U.S. Geological Survey Open File Report 79-951., 7p. (1979).

Huey, A.S., Geology of the Tesla (15 minute) Quadrangle, California, California Division of Mines, Bulletin 140, 75p., map scale 1:62,500 (1948).

_____, A Report on the Geology of the Eastern Portion of the Livermore Area: Report for John A. Blume and Associates, Engineers, 8p. (1972).

Institute of Transportation Engineers, Transportation and Traffic Engineering Handbook (1976).

_____, Trip Generation (1979).

The Independent, miscellaneous newspaper articles.

Interactive Resources, Inc., Contra Costa Energy Resources and Conservation Study, volumes 1 and 2 (May 1976).

Kojan, Eugene, Analysis of Several Gravitational Mass Movement Processes; Their Incidence, Morphology, Mechanics and Rates, with a Suggested Procedure for Regional Hazard Prediction, PhD thesis, UC Berkeley (1972).

Lawson, A.C., Description of the San Francisco District, U.S. Geological Survey Atlas, Folio 193, 24p., map scale 1:62,500 (1914).

_____, and others, The California Earthquake of April 18, 1906, Report of the State Earthquake Investigation Commission, Carnegie Institute, Washington, D.C., Pub. 87, 2 Vols. (1908).

Livermore Area Recreation and Park District, Master Plan (May 1974).

Livermore Chamber of Commerce, Community Economic Profile (May 1981).

City of Livermore, Community General Plan, 1976-2000, for the City of Livermore: Adopted by the City Council Resolution 54-76, March 8, 1976, 155p. with supplements (1967).

_____, Sphere of Influence Study (August, 1981).

Livingston and Blayney, Livermore-Pleasanton BART Extension Study (1975).

Lowry and Associates, Wastewater Management Plan for Proposed Northbluff Development, for Broadmoor Development Company (March, 1981).

_____, Conceptual Wastewater Management Plan for Las Positas Development, Alameda County, California (February, 1982).

McMasters and Westland, Livermore Industrial Market Presentation, (1981).

Merrill and Seeley, Inc., "Exploratory Trenching Methods for the Evaluation of Fault Activity within Alquist-Priolo Special Studies Zones, San Francisco Bay Area, California": unpublished technical paper in preparation for submission to Association of Engineering Geologists Bulletin, 13 p. (March, 1980).

_____, Evalution of Faulting Hazards, Livermore General Planning Area, Livermore, California: Unpublished consulting report of Merrill & Seeley, Inc., 14p., 3 appendices, (1980).

Metcalf & Eddy, Inc., Wastewater Engineering, McGraw-Hill Book Company (1972).

Metropolitan Transportation Commission (MTC), Trip Length Distribution Tables, Bay Area Region and Alameda-Contra Costa Counties (1982).

_____, 1981-82 Regional Transportation Improvement Program (1981).

_____, Regional Transportation Plan for the San Francisco Bay Area (1981).

Nilsen, T.H., Preliminary photointerpretation of landslide and other surficial deposits of the Livermore and part of the Hayward 15 minute quadrangles, Alameda and Contra Costa Counties, California: U.S. Geological Survey Map MF-519, Basic Data Contribution 59, map scale 1:62,500 (1973).

_____, Preliminary photointerpretation map of landslides and other surficial deposits of the Byron Area, Contra Costa and Alameda Counties, California: U.S. Geological Survey Miscellaneous Field Study MF-338, Basic Data Contribution 38, map scale 1:62,500 (1972a).

_____, Preliminary photointerpretation map of landslides and other surficial deposits of parts of the Altamont and Carbona 15 minute quadrangles, Alameda County, California: U.S. Geological Survey Miscellaneous Field Study MF-321, Basic Data Contribution 34, map scale 1:62,500 (1972b).

_____, Preliminary photointerpretation map of landslides and other surficial deposits of the Mt. Diablo area, Contra Costa and Alameda Counties, California: U.S. Geological Survey Miscellaneous Field Studies MF-310, Basic Data Contribution 31, map scale 1:62,500 (1971).

_____, Taylor, F.A., and Brabb, E.E., Recent landslides in Alameda County, California (1940-71) - An estimate of economic losses and correlations with slope, rainfall and ancient landslide deposits: U.S. Geological Survey Bulletin 1398, 21p. (1975).

_____, and Turner, B.L., The influence of rainfall and ancient landslide deposits on recent landslides (1950-71) in urban areas of Contra Costa County, California: U.S. Geological Survey Bulletin 1388, 18p. (1975).

_____, Preliminary photointerpretation maps of landslides and other surficial deposits of the Altamont, Byron Hot Springs, Livermore, and Tassajara 7½ minute quadrangles in California, Open-File 75-277, map scale 1:24,000 (1975).

_____, Wright, R.H., Vlasic, T.C., and Spangle W.E., Relative slope stability and land-use planning in the San Francisco Bay region, California, U.S. Geological Survey Professional Paper 944, 96p., map scale 1:125,000 (1979).

Oakeshott, G.B., Patterns of ground rupture in fault zones - some case histories in Moran, D.E., et al., eds., Geology, Siesmicity and Environmental Impact: Association of Engineering Geologists, Special Publication, pp. 287-312 (1974).

Oestrieich, E.S., Geology of the Tassajara quadrangle: California University at Berkeley, M.S. thesis, 80 p. (1958).

Page, B.M. "Geology of the Coast Ranges of California", in Geology of Northern California, E.H. Bailey, ed., California Division of Mines and Geology, Bulletin 190 (1966).

Pampeyan, E.H., Geology and mineral deposits of Mount Diablo, Contra Costa County, California: California Division of Mines and Geology, Special Report 80, 31p. (1963).

_____, Recency of Faulting, Coastal North-Central California, U.S. Geological Survey Miscellaneous Field Studies Map MF-1070, map scale 1:125,000 (1979).

Phillips, Brandt, Reddick, Livermore-Amador Valley Air Quality/Housing Demand Analysis, San Francisco, California (1981).

City of Pleasanton, Pleasanton General Plan (1976).

City of Pleasanton, Proposed Housing Element (December, 1981).

Ploessel, Michael R., and Slosson, James E., Repeatable High Ground Accelerations from Earthquakes, in California Geology, pp. 195-199 (September, 1974).

Purcell, Rhoades and Associates, Phase I, Preliminary Geotechnical Investigation, Northbluff Property, Report to Broadmoor Development Company by Purcell, Rhoades and Associates, Sunnyvale, California, 16p. (1980a).

_____, Phase IV, Field Percolation, Permeability Tests and Geotechnical Appraisal, Highlands Region, Northbluff Property, Livermore, California, Report to Broadmoor Development Company by Purcell, Rhoades and Associates, Sunnyvale, California 21p. (1980b).

_____, Siesmic Hazard Fault Study and Composite Geotechnical Report, Northbluff Property, Livermore, California, Report to Broadmoor Development Company by Purcell, Rhoades and Associates, Sunnyvale, California, 21p. (1981).

Radbruch, D.H., Map showing recently active breaks along the Hayward fault zone and the southern part of the Calaveras fault zone, Open-File Map I-813, U.S. Geological Survey, map scale 1:24,000 (1966).

_____, "Approximate Location of Fault Traces and Historic Surface Ruptures within the Hayward Fault Zone Between San Pablo and Warm Springs, California", U.S. Geological Survey Miscellaneous Investigation Map I-552, map scale 1:24,000 (1967).

_____, "New Evidence of Historic Fault Activity in Alameda, Contra Costa and Santa Clara Counties, California", in Proceeding of the Conference on Geologic Problems of San Andreas Fault System, Stanford University Publications in Geological Sciences, V. 11, pp. 46-54 (1968).

Radbruch-Hall, D.H., Map showing recently active breaks along the Hayward fault zone and the southern part of the Calaveras fault zone, California: U.S. Geological Survey Miscellaneous Investigations Map I-813, map scale 1:24,000 (1974).

Reimer Associates, Transportation System Management for the Gateway, South San Francisco, (1982).

Scheimer, J.F., Seismicity of the Livermore Valley Region, 1969-1981 (1981).

Schabel, Per B., and Seed, Bolton H., "Accelerations in Rock for Earthquakes in the Western United States," Earthquake Engineering Research Center, University of California, Berkeley, Report No. EERC 72-2 (1972).

Schwartz, D.P., Coopersmith, K.J., and Ridley, A.P., "Surface deformation and afterslip associated with the Livermore Valley earthquakes of 24 and 26 January, 1980": abstract paper submitted to the AGU Spring Meeting, Toronto (1980).

Security Pacific National Bank, Economic Report, June, 1981; California Housing Affordability, 1980; A Community Guide to the Greater East Bay (1980).

Seed, H. Bolton, et al, "Relationships Between Maximum Acceleration, Maximum Velocity, Distance from Source and Local Site Conditions for Moderately Strong Earthquakes", Earthquake Engineering Research Center, University of California, Berkeley, Report No. EERC 75-17 (1975).

Selleck, William Lewis, The Use of Aerial Photographs to Delinate Expansive Soils in the San Francisco Bay Area, (unpublished student report), Stanford University (1972).

Shakal, A.F., Earthquake Strong Motion Instrument at Lawrence Livermore National Laboratory.

Shedlock, M., McGuire, K., and Herd, G., Earthquake recurrence in the San Francisco Bay Region, California, from Fault Slip and Seismic Monument, U.S. Geological Survey Open-File Report 80-999, 16p. (1980).

Sieh, K.E., "Prehistoric Large Earthquakes Produced by Slip on the San Andreas Fault at Pallett Creek, California" in Journal of Geophysics Res. 83, pp. 3907-3939 (1978).

Slemmons, D.B., State-of-the-art for assessing earthquake hazards in the United States, Report 6, Faults and earthquake magnitude: U.S. Army Engineer Waterways Experiment Station, Soils and Pavements Laboratory, Vicksburg, Mississippi, 166p. (1977).

Smith, Merritt B., Groundwater in the Livermore Valley, California: Stanford University, unpublished M.A. thesis (1934).

Stratta, J.L., Damage to the Sunrise Mobile Home Park; Greenville, California earthquake sequence of January, 1980: in Earthquake Engineering Research Institute Newsletter, v. 14, no. 2, p. 54 (1980).

Sweeney, J.J., Magnitudes of Slip Along the Greenville Fault in the Diablo Range and Corral Hollow Areas.

TJKM, North Pleasanton Traffic Study, Vol. 1, (1981).

Taff, J.A., Geology of Mount Diablo and Vicinity: Geological Society of America Bulletin, v. 46, pp. 1079-1100 (1935).

Taylor, C.L., and Cluff, L.S., Fault Activity and its Significance Assessed by Exploratory Excavation, in Proceedings of the conference on tectonic problems of the San Andreas fault system: Stanford University Publication, Geological Sciences, v. 13, pp. 239-247 (1973).

Taylor, Charles L., and Brogan, George E., "Classification of Fault Activity for Engineering Purposes," in Proceedings of the 11th Annual Engineering Geology and Soils Engineering Symposium, Moscow, Idaho (1973).

Tokarz, F.J. and Shaw, G., Seismic Safety of the Plutonium Facility (Building 332), Lawrence Livermore National Laboratory, Livermore, California (UCRL-52786, 65p. (1980).

Transportation Research Board, Interim Materials on Highway Capacity, (1980).

URS/John A. Blue and Associates, Inc., Seismic and Geologic Investigations of the Sandia Livermore Laboratory Site and Structural Investigations of the Tritium Research Facility, Report to Sandia Laboratories, Livermore, California, by URS/John A. Blume and Associates, Inc., San Francisco, California, 106p. (1978).

U.S. Department of Agriculture, Soil Conservation Service, (Welch, L.E., et al.), Soil Survey, Alameda Area, California: U.S. Department of Agriculture Soil Conservation Services, Series 1961, No. 41, 95p. (1966).

U.S. Bureau of the Census, U.S. Census Population.

U.S. Army Corps of Engineers, Upper Alameda Creek Urban Study, Vols. I and II (June, 1981).

U.S. Environmental Protection Agency, Construction Costs for Municipal Wastewater Treatment Plants: 1973 - 1978, EPA 430/9-80-003 (April, 1980).

_____, Guidance for Planning the Location of Water Supply Intakes Downstream from Municipal Wastewater Treatment Facilities, EPA 68-01-4473 (April 1978).

U.S. Geological Survey, aerial photographs, (low-sun angle, color, vertical) scale approx. 1:20,000, numbers 1-44 to 1-55 and 1-106 to 1-122, flown 8/14/74 and 9/17/74 (obtained from Rapidcolor, Burbank, California) (1974).

Valley Pioneer, miscellaneous newspaper articles (1981 and 1982).

Valley Times, miscellaneous newspaper articles (1981 and 1982).

Vickery, F.P., Structural dynamics of the Livermore region: Stanford University PhD. thesis, 70p. (1924).

_____, "The structual dynamics of the Livermore region:": in Jour. Geology, v. 33, pp. 608-628 (1925).

Wagner, J.R., Late Cenozoic History of the Coast Ranges East of San Francisco Bay, U.C. Berkeley, PhD. thesis, and portions of 12 quadrangles, map scale 1:24,000 (1978).

Wallace, R.E., "Notes on Stream Channels Offset by the San Andreas Fault, Southern Coast Ranges, California", in Dickenson, W.R., and Grantz, Arthur, eds., Proceedings of the Conference on Geologic Problems of the San Andreas Fault System, September 14-16, 1967, Stanford Univeristy Pubs. Geol. Science, Vol. 11, pp 6-21 (1968).

Weaver, K.D., "Site Investigations for Potential Fault Rupture", abstract in Proceeding of the 11th Annual Engineering and Geologist and Soils Engineering Symposium, Moscow, Idaho, p. 105 (1973).

Wesson, R.L., Helley, E.J., Lajoie, K.R., and Wentworth, C.M., "Faults and Future Earthquakes", in Studies for Seismic Zonation of the San Francisco Bay Region, R. D. Borcherdt, ed., U.S. Geological Survey, Menlo Park, California, Prof. Paper 941-A, pp. 5-30 (1975).

Wigginton, W.B., and Carchy, D.B., Age Dating of Holocene Deposits within the Livermore and San Ramon Valleys.

Wight, L.G., A Geological and Seismological Investigation of the Lawrence Livermore Laboratory Site, Lawrence Livermore National Laboratory, Livermore, California, UCRL-51592, 38p. (1974).

Wight, L.H., A Geological and Seismological Investigation of the Lawrence Livermore Laboratory Site, in Draft Environmental Impact Statement, Livermore Site, Livermore, California: U.S. Department of Energy, pp. 2A-1 through 2A-31 (1978).

Woodward-Lundgren, Geologic and Soil Investigation for the Proposed Chabot College-Valley Campus, Livermore, California, consultant report for South County Joint Junior College District, 13p. (1974).

Wright, R.H., Character and Activity of the Greenville Structural Trend.

Youd, T.L., and Hoose, S.N., Historic Ground Failures in Northern California Triggered by Earthquakes, U.S. Geological Survey, Menlo Park, California, Prof. Paper, 993, 177p. (1978).

ADDENDUM TO THE BIBLIOGRAPHY

O.C. Achnivu, "An Apprisal of the Labor Supply for the Proposed Hacienda Business Park" (March 1982).

Association of Bay Area Governments, "Income Distribution: Housing Needs Assessment Technical Memo 2" (March 18, 1982).

California Department of Fish Game, At the Crossroads, A Report on California's Endangered and Rare Fish and Wildlife, Sacramento, California (1972).

California Department of Human Resources Development, "Community Labor Market Survey - Livermore" (September, 1060 - September, 1970).

California Department of Water Resources, Bulletin 166-3, Urban Water Use (Preliminary data) (no date).

_____, Recommended Water Management Plan for Alameda County Flood Control and Water Conservation District, Zone 7 (November, 1982).

_____, Bulletin 132-82 (November, 1982).

California Employment Development Department, "Annual Planning Information," (various dates).

_____, "Projections of Employment by Industry and Occupation, 1980-1985, San Francisco-Oakland SMSA (September, 1982).

Camp Dresser & McKee, Inc., for Zone 7, Alameda County Flood Control and Water Conservation District, Wastewater Management Plan for the Unsewered, Unincorporated Area of Alameda Creek Watershed Above Niles (May, 1982)

Gruen, Gruen & Associates, An Analysis of the Secondary Employment Impacts of Approved North Pleasanton Commercial/Industrial Development (November, 1982)

_____, A Survey Analysis of the Employment, Demographic and Housing Characteristics of the Hacienda Business Park Labor Pool (October, 1982)

____, "Study of North Pleasanton Business Parks"(February, 1982)

City of Hayward, Conservation and Environmental Protection Study (1975)

Livermore Chamber of Commerce, Community Economic Profile (May, 1981)

City of Livermore Planning Department, Noise Element of the General Plan (October, 1977)

August W. Compton & Associates, Master Plan- Livermore Municipal Airport (December, 1975)

SRI International, "Western Real Estate News, Vol. 340, No. 16, (August 1981)

U.S. Bureau of the Census,"U.S. Census of Population"(1971-72)

Appendix H

TECHNICAL REPORT

The Agricultural Potential of The Las Positas Properties

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January 1982

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Part I
The Las Positas Valley

SUMMARY

This study covers about 3,500 acres of land in the Las Positas Valley north of Livermore, California.

The soils are mostly class III and IV under the Soil Conservation Service capability classification and are used for dry farmed grain, grain hay and pasture.

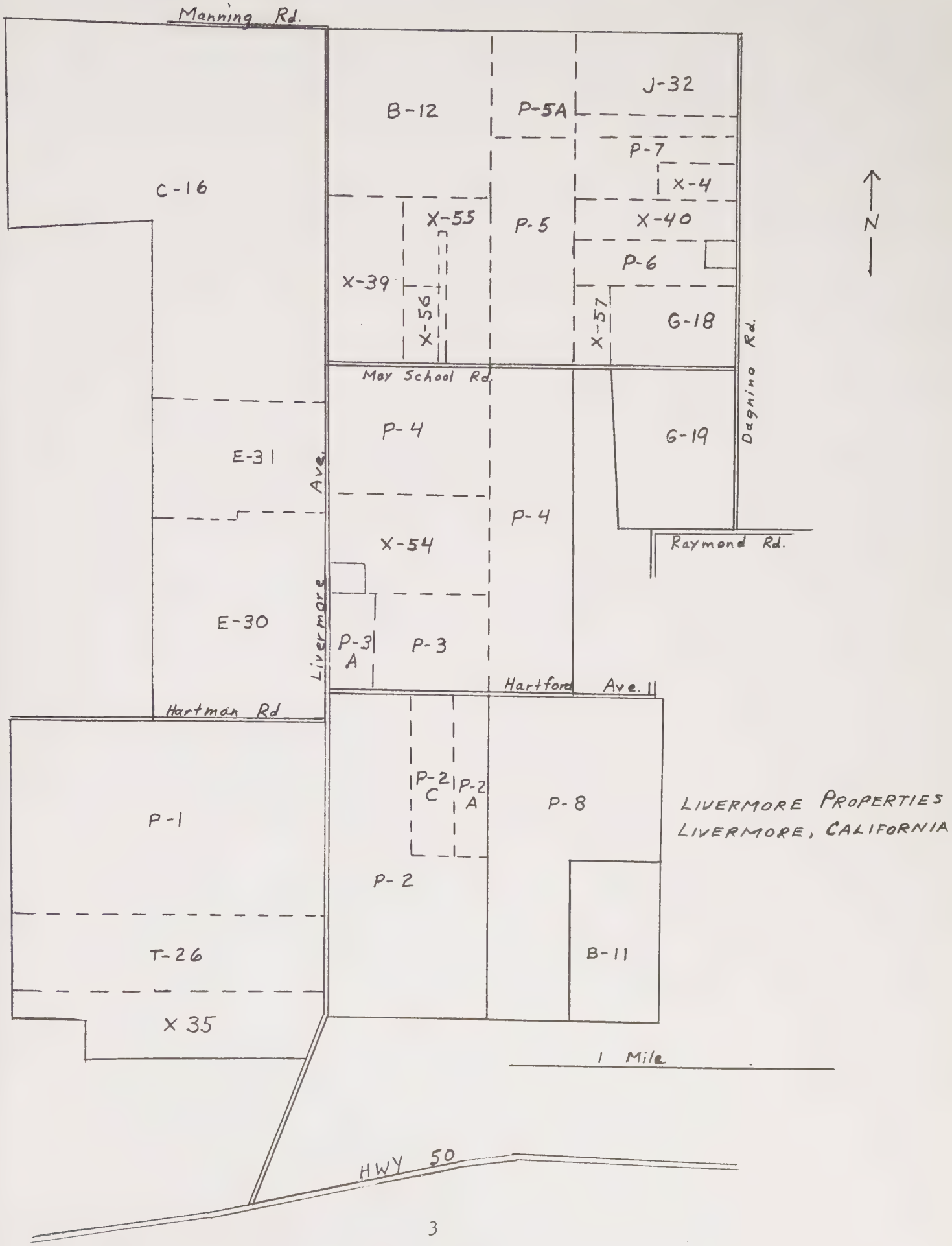
There is no adequate source of irrigation water of the area so there appears to be no possibility of changing to more profitable enterprises.

The crops which can be grown are low profit crops. In order to make a satisfactory living, the farmers have had to use this land in conjunction with other land, have had to engage in non-agricultural pursuits, or occasionally sell off a small parcel of land.

There is nothing in the foreseeable future which would indicate any long term improvement in the profitability of the farms in this area. Historically, farm costs have risen faster than farm incomes causing farmers to always be in a cost-price squeeze. This situation is expected to continue.

Agricultural Potential Of The
Livermore Properties
Las Positas Valley
Livermore, California

This study analyzes the agricultural potential of the Livermore Properties located in the Las Positas Valley just north of Livermore, Alameda County, California. The area contains about 3,500 acres of agricultural land used for dry farmed small grain, grain hay and pasture. The layout of the land is shown on the map on the following page.



LIVERMORE PROPERTIES
LIVERMORE, CALIFORNIA

General Description

Elevation

The elevation varies from about 480 feet at the southern boundary where Cayetano Creek leaves the property to about 800 feet in the northwest corner.

Topography

The topography is level to moderately steep.

Soils

There are nine soil types on the property. Most of the area is Class III and IV under the USDA Soil Conservation Service capability classes and are suitable for cultivation. There are small areas of Class VI soil which are suitable only for pasture.

These soils are all fine textured and the optimum period for cultivating is in a narrow range at about 50 percent available soil moisture.

These soils are described as follows:

Altamont clay, 3-15% slope. Well drained and slowly permeable. Runoff medium. Root penetration deep, available water holding capacity moderate to high. Fertility is high. Erosion hazard slight. Somewhat difficult to work.

Used for dry farmed grain, and grain hay. Class III.

Altamont clay, 15-30% slope. Occurs in large bodies on smooth hills, Similar to Altamont clay 3-15% slope. Erosion hazard moderate when cultivated. Has good tilth, but can be cultivated best when the moisture content is about half field capacity.

Used for dry farmed grain, grain hay, pasture and range. Class IV.

Clear Lake clay, drained, 0-3% slope. Occurs in large bodies in nearly level basins. May be slightly affected by salts and alkali. Slowly permeable,

runoff slow. Drainage moderately good. Root penetration very deep, available water holding capacity high. Has fair tilth. Fertility is high. Erosion is no problem.

Used for dry farmed grain and grain hay. Class III.

Clear Lake clay, drained 3 to 7% slope. Similar to Clear Lake clay drained, 0-3% slope except for steeper slopes.

Used for dry farmed grain and grain hay. Class III.

Diablo clay, very deep, 3-15% slope. Well drained and slowly permeable. Runoff slow to medium. Deep root penetration, moderate water holding capacity. Fair tilth, but difficult to work. Fertility is high. Slight to moderate erosion hazard if cultivated.

Used for dry farmed grain, grain hay, pasture, and range. Class III.

Linne clay loam, 3-15% slope. Well drained, permeability moderately slow. Runoff slow to medium, water holding capacity moderate. Root penetration moderately deep. Slight to moderate erosion hazard when cultivated. Easy to cultivate.

Used for dry farmed grain and grain hay. Class III.

Linne clay loam, 15-30% slope. Similar to Linne clay loam, 3-15% slope except for steeper slopes. Runoff medium. Difficult to cultivate because of steepness.

Used for dry farmed grain, grain hay, pasture, and range. Class IV.

Linne clay loam, 30-45% slope, eroded. Similar to the previous Linne clay loam except slope. Runoff medium to rapid. Erosion hazard severe. Difficult to cultivate.

Used for pasture and range. Class VI.

Pescadero clay. Occurs in large nearly level areas, but has hog wallow or hummocky microrelief. Surface soil eight inches or less in depth. May have slight salt and alkali. Imperfectly drained and very slowly permeable. Runoff slow, water holding capacity low. Root penetration moderately deep. Has poor tilth, difficult to cultivate. Fertility low, erosion hazard slight.

Used for pasture. Class VI.

Climate

The climate is mild with cool moist winters and hot dry summers.

The rainfall averages 14-15 inches distributed as follows during the year:

	Inches
January	3.0
February	2.5
March	2.3
April	1.0
May	.5
June	.1
July	T
August	T
September	.3
October	.6
November	1.5
December	2.7
Total	14.5

Temperatures average about 48 degrees in January and December, and 70 degrees in July and August. The average low in January is 36 degrees and the average high in July is 88. The maximum temperature has been 115 degrees, and the lowest 19 degrees.

The frost free period of 255 days extends from about March 15 to November 25. Frosts can occur as late as April 15 in the spring and as early as November 25 in the fall.

The area is occasionally subject to strong north winds which have made it difficult to harvest some crops that have been tried in the area and they can trigger respiratory problems with livestock during the winter.

Irrigation Water

Most wells in the area yield from 20 to 80 gallons of water per minute. Two deep wells on the western side of the valley have a reported flow of 400 gpm. Waters in the eastern side of the valley contain excess amounts of chloride, boron, and flouride and are not usable for irrigation.

Due to the small amount of ground water available, the low output of the wells, and the amount of salt in the water, irrigation possibilities in the area sre extremely limited. Adequate irrigation requires a water flow of about 10 gallons per minute per acre. The increases in energy costs also limit the profitability of irrigation in the area. The owner of the two irrigation wells mentioned above has not used them for three years because irrigation proved unprofitable.

Present Farming in the Area

The area is presently used for the production of small grains, largely barley, grain hay, and pasture. Growers have tried other crops such as beans and safflower, but their production has not been successful due to weather, pests and cost factors.

Most of the area is farmed by growers who use this land in conjunction with other property in order to generate sufficient income for family living. Smaller growers are engaged in a number of nonfarm activities such as buying and selling hay, operating a truck service, and doing custom farm work in order to supplement their agricultural income.

Projected Farming

Due to the lack of irrigation water in the area, it does not appear that there can be any major change in the agriculture of the area. Small grain, grain hay and pasture are the only non-irrigated crops suitable for the soils and climate of the valley. These crops are all low return, rather extensive types of agriculture. There is no indication that this situation will change since historically, farm costs have risen faster than farm income.

As the following budgers indicate, none of these enterprises are very profitable. Farmers are able to operate by accepting a very low return for their labor and investment.

Barley

Income	Per Acre
Barley 1.4 ton @ $110	$154
Expense	
Seed 80# @ 8.50 cwt	$ 7
Herbicide	5
Fuel, oil, reports	20
Labor	10
Interest on operating capital	2
Harvest cash cost	10
Cash overhead	10
Depreciation	25
Total	$179
Net income	(25)

Grain Hay

Income	
Hay 1.2 ton @ $60	$ 72
Expense	
Seed	$ 7
Fuel, oil, repairs	20
Labor	10
Interest on operating capital	2
Harvest	20
Cash overhead	10
Depreciation	25
Total cost	$ 94
Net income	(22)

Beef - Cow Calf Operation - selling weaner calves

Income	Per cow
Weaner steers .4 @ 500 lb. = 200 lb. @ .65	$130
Weaner heifers .25 @ 470 lb. = 118 lb. @ .60	70
Cull cows .2 @ 1,000 lb. = 200 lbs. @ .35	70
Cull bulls 12 lb. @ .45	5
Total Income	$275

Expenses	
Hay 1/2 ton @ $60	$ 30
Concentrate 180 lb. @ 10¢	18
Salt	2
Range and pasture	130
Total feed	$180
Labor	50
Vet and medicine	5
Bull replacement	10
Cattle tax 1/2¢ per head per day	2
Fuel, oil, repairs	12
Cash overhead	5
Interest on operating capital	16
Depreciation	10
Total cost	$290
Net income	(15)

Conclusion

Farming in the Las Positas Valley can probably survive providing the farmers are willing to accept low returns for their labor, management, and investment. Smaller farmers will have to continue to engage in non-agricultural activities in order to support their families or they will have to sell off small blocks of land to obtain a cash flow. This will result in a continued decline in the agriculture of the area.

Part II
The Cynthia J. Smith Property

Summary

This study covers 110 acres of land in Las Positas Valley just north of Livermore, California.

About 70 percent of the property is Class III and IV soils limited to dry land grain, grain hay and pasture. The balance is Class VI and is suitable only for pasture.

There is no adequate supply of irrigation water so more profitable intensive crops cannot be produced.

The parcel is too small to be farmed as a separate unit so it is rented to other farmers in the area. Annual rental rates on this type of property are $8.00 to $8.50 per acre. After covering the land owners expenses, very little is left for return on investment.

Agricultural Potential of the
Cynthia J. Smith Property
Las Positas Valley
Livermore, California

This study covers approximately 110 acres of land on Livermore Avenue just north of the city of Livermore, Alameda County, California. The property is No. A.P.N. 99-5-4-1 on the map following this page.

General Description

Elevation

The elevation varies from about 480 feet to 560 feet.

Topography

Topography is level to moderately steep.

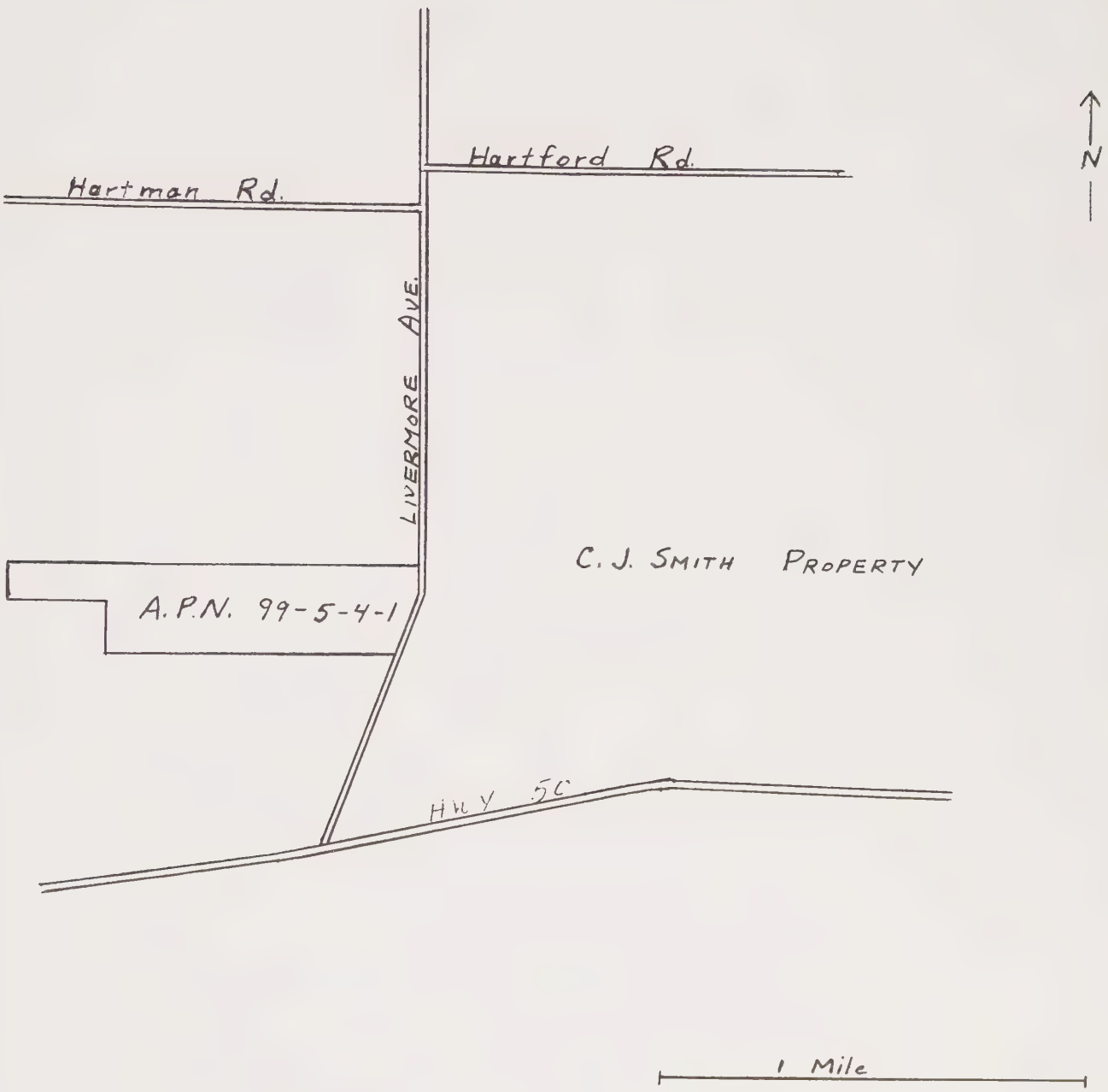
Soils

There are four soil series on the property. About 70 percent of the area is Class III and IV under the Soil Conservation Service classification and can be farmed to small grains, grain hay, and pasture. The balance of the area is Class VI and can be used only for pasture. The soils are fine textured and may at times, be difficult to cultivate. Detailed descriptions of the soils follows.

Soil symbol, series, and type	Class	Acres
Cda Clear Lake clay, drained, 0-3% slope	III	3
LaC Linne clay loam, 3-15% slope	III	25
LaD Linne clay loam, 15-30% slope	IV	23
Pd Pescadero clay	VI	31
		110

Clear Lake clay, drained, 0-3% slope, IIIs-5

Occurs in large bodies in nearly level basins. Slowly permeable, runoff very slow. Drainage moderately good. When the soil is dry and deeply cracked,


Hartman Rd.
Hartford Rd.
LIVERMORE AVE.
N
C. J. SMITH PROPERTY
A.P.N. 99-5-4-1
HWY 50
1 Mile

it absorbs water readily. Root penetration is very deep and the available water holding capacity is high. Fair tilth, fertility high, erosion not a problem.

Used for pasture, dry farmed grain and grain hay.

Linne clay loam, 3-15% slope, IIIe-5

Occurs in large bodies on smooth, gently sloping and rolling uplants. Runoff slow to medium. Erosion hazard is slight to moderate when the soil is cultivated. Easy to cultivate.

Used for dry farmed grain and grain hay.

Linne clay loam, 15-30% slope, IVe-5

Occurs in large bodies on smooth, moderately steep uplants. Well drained, permeability is moderately slow, runoff is medium, and the available water holding capacity is moderate. Root penetration moderately deep, high fertility. Has good tilth, but cultivation sometimes difficult because of slope. Erosion moderate when cultivated.

Used for pasture dry farmed grain and grain hay.

Pescadero clay, VIw-2

Occurs in large level areas, but has hog wollow or hummocky microrelief. Surface soil varies from 8-50 inches deep. Imperfectly drained and affected by salinity and alkali. Very slow permeability, runoff is slow, and available water holding capacity low. Root penetration moderately deep. Poor tilth, cultivation difficult, low fertility, but only slight erosion hazard.

Used mainly for pasture.

Irrigation Water

No adequate supply of irrigation water is available for this property.

Present Farming

Since the 110 acres in this parcel is too small to be a self-supprting agricultural entity, the property is rented to other farmers in the area. Going rates are $8.00 to $8.50 per acre per year. After expenses for taxes, fence repair, and depreciation, only a small amount remains as a return on the investment.

Projected Farming

Due to the lack of irrigation water and the small size of the parcel, it will continue to be rented to other farmers in the area.

Part III
The Albin Jensen Property

Summary

The four parcels included in this study contain approximately 663 acres divided among four different parcels. The property is located just north of the city of Livermore, California.

The soils are 93 percent Class III and IV suitable for dry farmed grain, grain hay, and pasture. The balance is Class VI suitable only for pasture.

There is no adequate supply of irrigation water for the property and the present dry farmed crops are the only enterprises adaptable to the area.

The property is farmed in conjunction with an additional 600-700 acres plus a herd of beef cattle.

These enterprises are very low profit producers and the operator has a hay buying and selling enterprise plus doing some custom work in order to increase the cash flow.

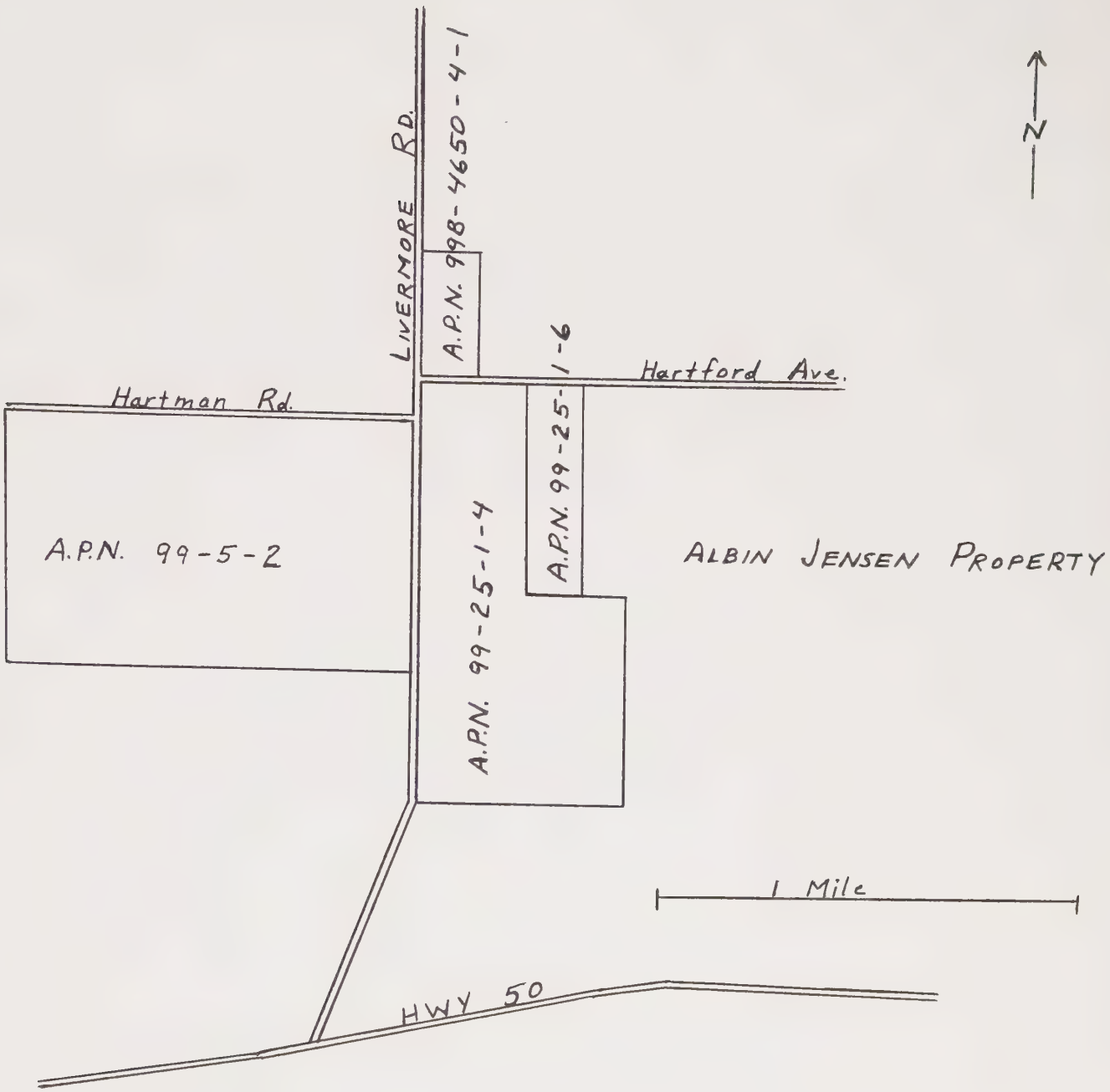
It does not appear that the situation will improve since historically farm costs have risen faster than farm incomes. This situation is expected to continue.

The Agricultural Potential of the
Albin Jensen Property
Las Positas Valley
Livermore, California

This study covered four parcels of land along Livermore Avenue just north of the city of Livermore. There are approximately 663 acres in the four parcels distributed as follows:

		Acres
A.P.N. 99-5-2	P-1	366
A.P.N. 99-25-1-4	P-2	218
A.P.N. 99-25-1-6	P-2C	54
A.P.N.99B-4650-4-1	P-3A	25
	Total	663

The parcel numbers refer to the designations on the map following this page.


LIVERMORE RD.
A.P.N. 998-4650-4-1
A.P.N. 99-25-1-6
Hartford Ave.
Hartman Rd.
A.P.N. 99-5-2
A.P.N. 99-25-1-4
A.P.N. 99-25-1-5
ALBIN JENSEN PROPERTY
N
1 Mile
HWY 50

General Description

Elevation

The elevation varies from about 500 feet to over 620 feet.

Topography

The topography varies from level to moderately steep.

Soils

There are five soil types on these parcels. About 93 percent of the area is Class III and IV under the Soil Conservation Service capability classification. These soils are adaptable to dry farmed grain, grain hay and pasture. The balance of the area is Class VI suitable only for pasture.

The soils are distributed among the parcels as follows:

Parcel A.P.N. 99-5-2 approximately 366 acres

Series and type	Class	Acres
Clear Lake clay, drained, 0-3% slope	III	246
Linne clay loam, 3-15% slope	III	120
Total		346

Parcel A.P.N. 99-25-1-4 approximately 218 acres

Altamont clay, 3-15% slope	III	185
Linne clay loam, 15-30% slope	IV	11
Pescadero clay	VI	22
Total		218

Parcel A.P.N. 99-25-1-6 approximately 54 acres

Altamont clay, 3-15% slope	III	17
Linne clay loam, 15-30% slope	IV	17
Pescadero clay	VI	20
Total		54

Parcel A.P.N. 99B-4650-4-1 approximately 25 acres

Series and type	Class	Acres
Clear Lake clay, drained, 0-3% slope	III	23
Pescadero clay	VI	2
Total		25

Detailed descriptions of the soils are as follows:

Altamont clay, 3-15% slope, III

Consists of well drained, moderately deep to deep soils on rolling uplands. Permeability is slow, runoff medium, root penetration deep, water holding capacity moderate to high, and slight erosion hazard. Somewhat difficult to work.

Used for dry farmed grain and grain hay.

Clear Lake clay, 3-15% slopes, III

Occurs in large bodies in nearly level basins. Slowly permeable, runoff very slow. Drainage moderately good. When the soil is dry and deeply cracked, it absorbs water readily. Root penetration is very deep and the available water holding capacity is high. Fair tilth, fertility high, erosion not a problem.

Used for pasture, dry farmed grain and grain hay.

Linne clay loam, 3-15% slope, IIIe-5

Occurs in large bodies on smooth, gently sloping and rolling uplants. Runoff slow to medium. Erosion hazard is slight to moderate when the soil is cultivated. Easy to cultivate.

Used for dry farmed grain and grain hay.

Linne clay loam, 15-30% slope, IVe-5

Occurs in large bodies on smooth, moderately steep uplants. Well drained, permeability is moderately slow, runoff is medium, and the available water holding capacity is moderate. Root penetration moderately deep, high

fertility. Has good tilth, but cultivation sometimes difficult because of slope. Erosion moderate when cultivated.

Used for pasture dry farmed grain and grain hay.

Pescadero clay, VIw-2

Occurs in large level areas, but has hog wollow or hummocky microrelief. Surface soil varies from 8-50 inches deep. Imperfectly drained and affected by salinity and alkali. Very slow permeability, runoff is slow, and available water holding capacity low. Root penetration moderately deep. Poor tilth, cultivation difficult, low fertility, but only slight erosion hazard.

Used mainly for pasture.

Irrigation water

There is no adequate source of irrigation water for the lands in these parcels.

Climate

The climate is mild with cool moist winters and hot dry summers.

The rainfall averages 14-15 inches distributed as follows during the year:

	Inches
January	3.0
February	2.5
March	2.3
April	1.0
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The frost free period of 255 days extends from about March 15 to November 25. Frosts can occur as late as April 15 in the spring and as early as November 25 in the fall.

The area is occasionally subject to strong north winds which have made it difficult to harvest some crops that have been tried in the area and they can trigger respiratory problems with livestock during the winter.

Present Farming

This land is farmed in conjunction with 600-700 acres of other land and used for small grains, grain hay and pasture plus a herd of beef cattle. The operator also has a hay buying and selling enterprise plus doing some custom work.

Projected Farming

Due to no irrigation water being available, the land will probably continue to be used for dry farmed grain, grain hay, and pasture. No other non-irrigated crops appear feasible for the soils and climate of the area. These crops are all low profit producers as indicated by the following budgets.

Qualifications

A. Doyle Reed
328 12th Street
Davis, CA 95616
916-753-2759

Education

Lawrence (Kansas) High School, 1930-34
Kansas State University, 1934-38, B.S. Agricultural Economics
Kansas State University, 1938-40, M.S. Agricultural Economics
University of California, Berkeley, 1946-48, Ph.D., (Conferred 1951), Agricultural Economics

Employment Record

January 1980 to date: Senior Lecturer in Agricultural Economics, University of California, Davis. Teaching Farm Management and Rural Appraisal.

1948-1979: Extension Economist specializing in Farm Management, University of California, Davis. Worked throughout California on all types of farm management problems. Included were cost of production studies, enterprise selection, leasing arrangements, economics of scale, labor management, machinery management, feasibility studies, financing, income tax, and estate planning.

1946-48: Research Assistant and Graduate Student, University of California, Berkeley.

1941-45: Personnel Officer, U.S. Army.

1940-41: Instructor, Texas A & M College.

Professional Organizations

American Society of Farm Managers and Rural Appraisers
- College Vice President - 1960
- Award for Distinguished Service to Agriculture - 1980

California Chapter, American Society of Farm Managers and Rural Appraisers
- Secretary-Treasurer: 1957 to date.
- President - 1974
- Distinguished Service Award: 1975

American Academy for the Advancement of Science